ADDITIONS, CHANGES AND CORRECTIONS

TO KEEP YOUR PHOTOFACT FOLDERS UP TO THE MINUTE

GENERAL ELECTRIC - MODEL 250

Page 3 - Item 47 JENSEN Part Listing should be ST-105 Model P6-X.

CUT ON THIS LINE—MOISTEN EDGE—AND APPLY TO PROPER FOLDER

GENERAL ELECTRIC - MODEL 321

Page 2 - Item 7A,B SPRAGUE Part Listing should be EL-452.

Page 3 - Item 44 JENSEN Part Listing should be ST-105 Model P6-X1. Add Installation Note - †Fabricate mounting bracket.

CUT ON THIS LINE—MOISTEN EDGE—AND APPLY TO PROPER FOLDER

HALLICRAFTERS - MODEL S-38

Page 2 - Item 7A, B, C, D AEROVOX Part Listing should be PRSA150-40-40, PRSA150-20-20.

CUT ON THIS LINE—MOISTEN EDGE—AND APPLY TO PROPER FOLDER

HOFFMAN - MODEL A501

Page 3 - On CHASSIS BOTTOM VIEW Reverse Item numbers 39 and 40.

CUT ON THIS LINE—MOISTEN EDGE—AND APPLY TO PROPER FOLDER

HOWARD - MODEL 901A SERIES

Page 4 - On the schematic diagram, reverse pin numbers shown on filament string of 12SA7, 12SK7 and 50L6GT. Filter resistor should be Item 31.

CUT ON THIS LINE—MOISTEN EDGE—AND APPLY TO PROPER FOLDER

MAJESTIC - MODEL 5A410 (CHASSIS 4501) MODEL 5A430 (CHASSIS 4504)

Page 3 - Item 33 MAJESTIC Part Listing should be 26-2.

CUT ON THIS LINE—MOISTEN EDGE—AND APPLY TO PROPER FOLDER

MANTOLA - MODELS R654-PM, R654-PV

Page 2 - Item 6A, B, C AEROVOX Part Listing should be PRSA150-40-40, PRS150-20.

CUT ON THIS LINE—MOISTEN EDGE—AND APPLY TO PROPER FOLDER

MANTOLA - MODELS R662, R662N

Page 2 - Items7A, B, C AEROVOX Part Listing should be AF1010D, PRS25-100.

Page 3 - Item 41 Delete STANCOR and THORDARSON Part Listing and Installation Note.
Item 42 THORDARSON Part Listing should be T-22S47.

CUT ON THIS LINE—MOISTEN EDGE—AND APPLY TO PROPER FOLDER

MIDLAND - MODEL M6B

Page 1 - Delete Step 4 in Alignment Instructions.

Page 2 - Item 2 Add Installation Note - Later productions use 12SK7.
Item 7A, B, C SOLAR Part Listing should be DSB-40+30+20-150.
Item 22A CLAROSTAT Part Listing should be AM-60-Z.
Item 22B CLAROSTAT Part Listing should be RS-2.

Page 3 - Item 43 Add Installation Note - Later productions use Type 47 Brown Bead.

CUT ON THIS LINE—MOISTEN EDGE—AND APPLY TO PROPER FOLDER

MOTOROLA - MODELS 55X11A, 55X12A, 55X13A

Page 3 - Item 30 MEISSNER Part Listing should be 16-6667.
Item 31 MEISSNER Part Listing should be 16-6668.

The PHOTOFACT Servicer

DECEMBER 10th, 1946 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ VOL. 2, No. 11

ROBERT M. ELLIS, *Editor*

PHOTOFACT SERVICER, COMBINED ISSUES 10 AND 11

The philosophy that Bobby Burns expounded about the best laid plans of mice and men is illustrated by the omission of the Servicer from PHOTOFACT Folder Set No. 10. Strikes, shortages and a number of completely unanticipated events combined to prevent its publication. Incidentally, we would like to know—do you like our house organ? Are there other features you would like to have included?

★ ★

WHY PHOTOFACT FOLDERS ARE BETTER

Many of you have asked why PHOTOFACT Folders are so much better than any other technical service—why they provide so much more help for your service problems.

Well, PHOTOFACT Folders are prepared directly from the actual receivers—our information is not a "rehash" of factory service bulletins. There is no surplus of information in one and a famine in the next—no changing format that requires one service routine on one set, and a different routine on the next. PHOTOFACT Folders give you *all* the information you need, no more, and no less; on every set. The information is presented in a uniform manner, under a standardized format. You can adopt the service procedure that gives the most rapid handling of incoming receivers, and you can adhere to this on all receivers regardless of make. Standardization means speed—regular users of PHOTOFACT Folders invariably find they can complete more repairs per day. That's why they are so much better than any other technical service.

Thanks to PHOTOFACT Folders you now have for the first time in the history of the radio industry correct, proved and approved replacement information on every vital part of every receiver. Previously, the recommendations for universal replacement parts were unavoidably on an "intelligent guess" basis, for the reason that replacement recommendations as a whole had to be made from values as listed on schematic diagrams with mechanical and mounting features usually unknown and left to guess and hope.

The replacement listings you get in PHOTOFACT Folders are not the result of our own ideas as to what does or does not constitute a proper and satisfactory replacement. The listings are the studied recommendations of the engineers of the participating manufacturers; and this information is accurate because we have supplied these engineers with every essential electrical, mechanical and physical characteristic of the original equipment product. We can do this, because we have the actual receiver at hand, and we take our measurements from the exact part which we wish to replace.

Now ask yourself—how could exclusive PHOTOFACT features be brought to you—uniformly and accurately—without having the actual receivers? We have never printed a PHOTOFACT Folder without having the actual set and working from it; and we *never* will.

★ ★

PHOTOFACT NUMBER SEQUENCE

A number of subscribers have written about supposedly missing folders, basing their request on the assumption that there should be a PHOTOFACT Folder in the envelope for every number between "1" and the highest numbered folder in the set. This is not necessarily correct.

We urge that you check each PHOTOFACT Folder Set for completeness on its arrival. This should be done by comparing the contents with the index printed on the envelope. You should have a PHOTOFACT Folder covering every item catalogued; but if a PHOTOFACT Number does not appear on the envelope index, you may be assured that this Folder was never printed.

A PHOTOFACT Folder number is more than just a number we assign to the folder when it is printed. The PHOTOFACT Folder number is actually our scheduling number assigned to a receiver the moment the chassis arrives at our laboratory. It sometimes happens for various reasons that we are unable to release a PHOTOFACT Folder to the printer on time to make a PHOTOFACT Folder Set. This usually comes about because some manufacturer wishes a change in the PHOTOFACT Folder, so that it will reflect a change recently made in production. When this occurs, we must make a substitution and reassign the receiver for a subsequent issue, in which case it acquires a new number.

We always keep a few extra sets in process than we can print in any issue, so that if any "hitch" occurs in the processing of any set, we will be able to make the substitution and still give our patrons full value as far as the number of diagrams are concerned.

We have a system for checking the packing of envelopes, so that omissions or duplications are relatively rare. However, as long as we are human, mistakes will occasionally occur. If you ever receive a PHOTOFACT Folder Set having a poorly printed, defective or missing folder, let us know at once. We want every PHOTOFACT Folder Set to be perfect, and we will be happy to have the opportunity of correcting any actual mistakes.

★ ★

"HOW TO DO OUTSIDE SERVICE INSIDE"

When we read the article with that caption in the SREPCO NEWS of December, 1946, we said, "Here is a good business idea that we should bring to our patrons." The Standard Radio and Electronic Products Company of Dayton and Springfield, Ohio, who publish this excellent little House Organ were contacted and they kindly gave us permission to make a reprint. What follows is theirs.

HOW TO DO OUTSIDE SERVICE INSIDE

Throughout the war little outside or in the home service has been accomplished. The burden of a tremendous volume of service with too little help and too few parts has made this service impossible. Most shops will be reluctant to start making a lot of outside calls again, and for two very good sound reasons. Equipment to be set up for outside service is hard to handle at best and work can be much more efficiently performed in the shop. Secondly, it is hard to recover your standard hourly rate for time spent going and coming from the home and getting things ready to do the job. Many sets are too large for the customer to deliver to the shop.

Several successful service dealers use the following plan with splendid results. They engage the services of a local delivery company on a flat rate basis to pick up and deliver the set. If the companies can pick up and deliver in the course of their regular trips to each part of the city the rates are surprisingly reasonable. These delivery companies are accustomed to collecting C.O.D. charges and can often better collect the service bill than you can when you deliver the set yourself. It seems a better plan for everyone concerned where it can be accomplished. The customer gets a better job done than is possible on a repair in the home. He actually pays less in most cases, for the delivery charges are less than your own time would cost. You are able to make the best productions and wages possible by having all sets in the store and ready to repair.

This problem is beginning to show up. Competition forces you to take more consideration of the customer. Maybe this plan can work successfully for you.

INSTITUTE NOTES

INSTITUTE SERVICE FOR MEMBERS ONLY

A situation has developed regarding the use of Institute Service which must be brought to the attention of all patrons. At the time when PHOTOFACT Service was organized, we realized that service engineers would have problems relating to the repair of receivers which would require personal help. We knew that we must make provision to give this individual assistance, and for this reason the Howard W. Sams Institute was organized. We knew too that the Institute would be costly, but we were willing to include the expense and time in our budget because we knew that the Institute would be a genuine help to the service engineer, and an added value to PHOTOFACT Folder purchasers. The popularity of the Institute is attested by the hundreds of letters that are pouring in from all over the United States and Canada.

Recent counts show that well over one-third of the requests for technical information and Institute help come from non-members. The time is rapidly approaching when we must separate our mail and confine Institute privileges to *members only*. To do otherwise would be unfair to members, who give their support by the regular purchase of PHOTOFACT Folders. From now on, if you are a member of the Institute, your correspondence will receive proper preference.

If you are a regular purchaser of PHOTOFACT Folders, and have not registered for membership in the Institute, do so at once! **ONE REGISTRATION IS ENOUGH—PLEASE SAVE THE BALANCE OF YOUR CARDS AND USE THEM AS IDENTIFICATION TO ACCOMPANY YOUR CORRESPONDENCE AND INSURE ITS PROMPT ATTENTION.**

★ ★

NO-ADDRESS FILE

Regrettably, we have some letters on hand that we would like to answer, but we can't; and we have some patrons who must be wondering why they do not get a reply. The reason we have these unanswered letters is that they do not carry a return address.

The fact that a patron may have written before, or that he has registered as a member of the Howard W. Sams Institute does not help us to locate an address because our files are arranged geographically rather than alphabetically. Accordingly, we ask that you be sure to place your complete address on the body of your letter as well as on the envelope when you write the Institute. If you have written us, and if a reasonable length of time has elapsed without receiving a reply, please write us again. The chances are we have your letter in our "No-Address" file.

In case you are wondering why our correspondence is filed in geographical sequence, you will be pleased to know it is so we can give Institute Members special notification of local events they will wish to attend, such as service meetings. There are great things being planned for members of the Institute. Be sure you are registered!

★ ★

FIELD EXPERIENCES

This is your column. It is your opportunity for passing practical service experiences to others for the mutual benefit of all. For every "Field Experience" published, we issue to the author a certificate that is good for one PHOTOFACT Folder Set from his authorized distributor; and the author is given full credit as the source for the information.

We endeavor to select those "Field Experiences" which will provide maximum benefit and interest to our patrons. Since it is impossible to verify the accuracy of all contributions, we cannot be responsible as to either the accuracy of diagnosis made of the receiver trouble, or as to the results which will be obtained by following the suggested service or repair routine. Contributions are welcome, but please do not send us routine or generally known data. All contributions become the property of Howard W. Sams & Company, Inc.

★

Byron Waite, 62 West Pine Street, Canton, Illinois, tells us:

ZENITH 6C05 CHASSIS

"Dead all or part of the time. Plays o.k. upside-down.

"Stator lug on oscillator section of tuning condenser touches chassis. Bend lug up and glue a piece of felt to chassis for condenser frame to rest on."

Ed Schultheiss, of South Street, So. Coventry Ct., Connecticut, sends us a service hint that he says works part of the time. It's the only remedy we have heard of so far for warped voice coil bobbins. We intend to try it on the next case of this kind we run into. Mr. Schultheiss says:

WARPED VOICE COIL BOBBINS

"Here's a little service hint I have used many times—pass it on to the boys.

Off-center speakers—caused by out-of-round coil forms—loosen spider—connect 1½ V DC across voice coil leads. Shim out—re-tighten or re-cement spider—I call this air gapping a cone."

★

Ward Radio Company, 4646 Shendandoah Avenue, St. Louis 10, Missouri, sent our column two excellent "Field Experiences." Accordingly, they will receive certificates for two PHOTOFACT Folder Sets.

ARVIN 664 NO SIGNAL, SET SOUNDS ALIVE

"Preliminary check: from pin 4, 14R7 socket to prongs of A.C. Plug, correct resistance approximately 460K ohms. (On later models, pin 4 12SQ7 to prongs of A.C. Plug.) Low or zero resistance is caused by short of by-pass plate to diode plate in second I.F. transformer trimmer assembly (green wire, diode-brown wire by-pass) due to incorrect assembly of trimmer.

"Correction of defect. Re-assemble trimmer plates in following order, by-pass plate next to ceramic base, A.V.C. plate next, diode plate next, remaining A.V.C. plate on top, next to adjustment screw. Original mica insulator pieces to be carefully placed between plates. Retune I.F. to 455 K.C."

ARVIN 444 RETUNING VARIABLE CONDENSERS

"This model has no trimmer adjustment on antenna section of variable condenser.

"Adjust Signal Tracer to known station in high frequency end, (1200 to 1400kc.) place Tracer probe on lug of set antenna stator section and tune set condenser, by dial shaft, to best response on Tracer. Remove Tracer probe and be sure not to move dial shaft. Now tune in this same station on set by adjusting oscillator trimmer (A3). With the adjustment made in this manner, it will very seldom be necessary to make any adjustment at the low frequency end of the dial.

★

Mr. E. A. Redmon of The Appliance Company, Ellinwood, Kansas, and Mr. Eugene A. Hughes, Box 472, Richmond, Kentucky, have sent us almost identical service suggestions. Maybe this makes the following doubly important, so that we are issuing a certificate to each.

PHILCO 46-480; 46-1209

"We would also like to call to your attention an alteration in Philco Sets 46-480 and 46-1209. The value of the resistor R300 is 4700 ohms and should be replaced with a resistor of 47000 ohms. . . . it will save quite a few 'hard-to-get' 7F8 tubes to make this correction before the sets are sold."

The resistor referred to by Messrs. Redmon and Hughes is the plate dropping or isolating resistor connected between the B+ bus and the red lead of the first I.F. transformer.

★

Walter Howerton's Radio Service at 121 North Third Street, Okemah, Oklahoma, sends us the following, which may be an "aspirin for someone's headache."

PHILCO 46-1201

"On '46 Philco 46-1201, if set is intermittent or dead on phonograph and plays on radio—replace item No. 8 (40 mfd. filter) —checks good but still is the fault. Have found this in two sets."

PUBLICATION DATES

When will other sets of PHOTOFACT Folders be published?

Volume 2	***Set No. 12***	**January 25**
"	***Set No. 13***	**February 10**
"	***Set No. 14***	**February 25**
"	***Set No. 15***	**March 10**

If you have been unable to get any issues of PHOTOFACT Folder Sets, send your order and money directly to us and we will see that you are supplied.

AIRADIO MODEL SU-41D

TRADE NAME	Airadio Model SU-41D- The Super "41"
MANUFACTURER	Airadio, Inc., Melrose Ave. and Barryplace, Stamford, Conn.
TYPE SET	Battery Operated Superheterodyne Aircraft Receiver
TUBES (FIVE)	Types, 1LN5 RF Amp., 1LA6 Converter, 1LN5 IF Amp., 1LH4 Det.-AVC-AF, 1LB4 Power Output.
POWER SUPPLY RATING	1.5 Volt "A" Supply & 90 Volt "B" Supply in Battery Pack Form 250 MA @ 1.5 V DC and 10.3 MA @ 86 V DC
TUNING RANGE--BROADCAST	195-420 KC

ALIGNMENT INSTRUCTIONS

To set pointer, turn variable fully closed and set pointer at last reference mark at the low freq. end of the dial. Set volume control at maximum volume and keep input from signal generator no higher than is necessary to obtain output reading. Set TOWER-VOICE-RANGE switch to range position. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin #6 of 1LA6. Low side to chassis.	90KC	High freq. end	Across phone jack terminals	A1,A2, A3,A4.	Adjust for maximum output.
50 MMF.	High side to ext. ant. Low side to chassis.	400KC	400KC	"	A5	" " " "
50 MMF.	"	"	"	"	A6,A7	" " " "
50 MMF.	"	200KC	200KC	"	A8	" " " "
50 MMF.	"	"	"	"	A9,A10	" " " "

Repeat last four steps until no further improvement can be made.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc."

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: AIRADIO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	1LN5	1LN5	7AO	
2	Converter	1LA6	1LA6	7AK	
3	IF Amp.	1LN5	1LN5	7AO	
4	Det.-AVC-AF	1LH4	1LH4	5AG	
5	Power Output	1LB4	1LB4	5AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRADIO PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6	10	200		M-10-150	UT-122	PRS150-12	BR1225	TC42	Pwr. Supp. Bypass
7	.01	150		TTF-1-01			ZN1S1	MT125	Output Plate Bypass
8	.01	150		TTF-1-01			ZN1S1	MT125	Audio Coupling
9	.01	150		TTF-1-01			ZN1S1	MT125	" "
10	.1	150		TTF-1-1			ZN1P1	MT145	Screen Bypass
11	.1	150		TTF-1-1			ZN1P1	MT145	Conv. Screen Bypass
12	.1	150		TTF-1-1			ZN1P1	MT145	Pwr. Supp. Bypass
13	.01	150		TTF-1-01			ZN1S1	MT125	AVC Filter
14	.01	150		TTF-1-01			ZN1S1	MT125	Ant. Coupling
15	1000	500		M0.3-21	1FM-21	1468-001	1W5D1	MC255	Range Filter
16	1000	500		M0.3-21	1FM-21	1468-001	1W5D1	MC255	" "
17	1000	500		M0.3-21	1FM-21	1468-001	1W5D1	MC255	" "
18	1000	500		M0.3-21	1FM-21	1468-001	1W5D1	MC255	" "
19	100	500		M0.5-31	1FM-31	1468-0001	5W5T1	MC235	IF Bypass Diode
20	100	500		M0.5-31	1FM-31	1468-0001	5W5T1	MC235	" " Volume Cont.
21	700	500		M0.3-37	1FM-37	1469-0007	1W5T7		Fixed Padder
22	50	500		M0.5-45	1FM-45	1468-00005	5W5Q5	MC225	Osc. Grid Capacitor
23	1000	500		M0.3-21	1FM-21	1468-001	1W5D1	MC255	AVC Filter

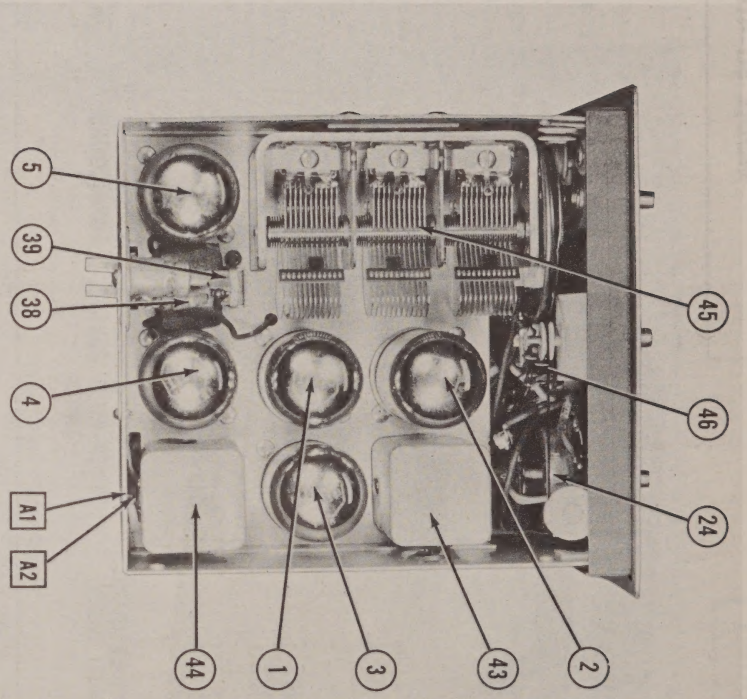
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRADIO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
24A	500KΩ	1					Volume Control
B	Shaft						Attach to 24A per instructions
C	Switch						" " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRADIO PART No.	IRC PART No.	IDENTIFICATION CODES
25	470KΩ	½		BTS-470K	Y1.-V1.-Y1. AVC Network
26	220KΩ	½		BTS-220K	Red-Blk.-Y1. Oscillator Grid
27	68KΩ	½		BTS-68K	Blue-Gray-Or. Oscillator Screen Dropping
28	680KΩ	½		BTS-680K	Blue-Gray-Y1. AVC Network
29	47KΩ	½		BTS-47K	Y1.-V1.-Or. Diode RF Filter
30	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Diode Load
31	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
32	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Plate Load
33	2.2 Meg.	½		BTS-2.2 Meg	Red-Red-Grn. Output Grid
34	68Ω	½		BW-½-68	Blue-Gray-Blk. Bias
35	75KΩ	½			V1.-Grn.-Or. Range Filter
36	150KΩ	½		BTS-150K	Br.-Grn.-Y1. " "
37	150KΩ	½		BTS-150K	Br.-Grn.-Y1. " "
38	22KΩ	½		BTS-22K	Red-Red-Or. Antenna Loading

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

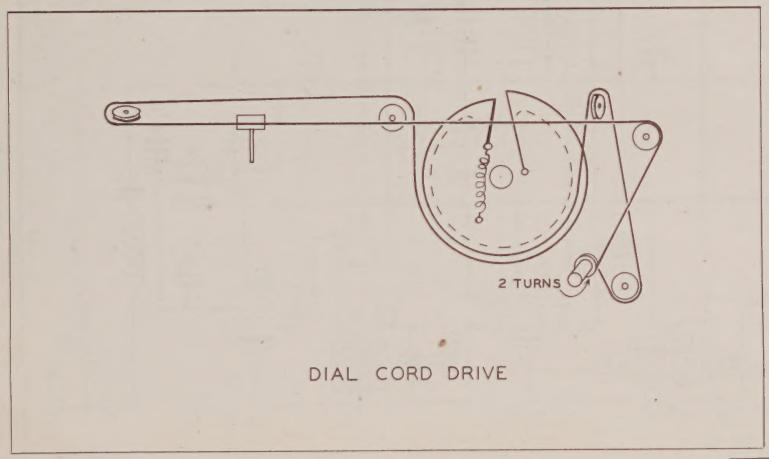
ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRADIO PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
39	7300Ω	600Ω	460Ω	20Ω					

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	AIRADIO PART No.	MEISSNER PART No.	
40A	Ant. Coil	44Ω				
B	RF Coil		44Ω			
41	Det. Coil	20Ω	48Ω			
42	Osc. Coil	11Ω	28Ω			
43	Input IF	23Ω	23.3Ω			
44	Output IF	23.5Ω	23.5Ω			

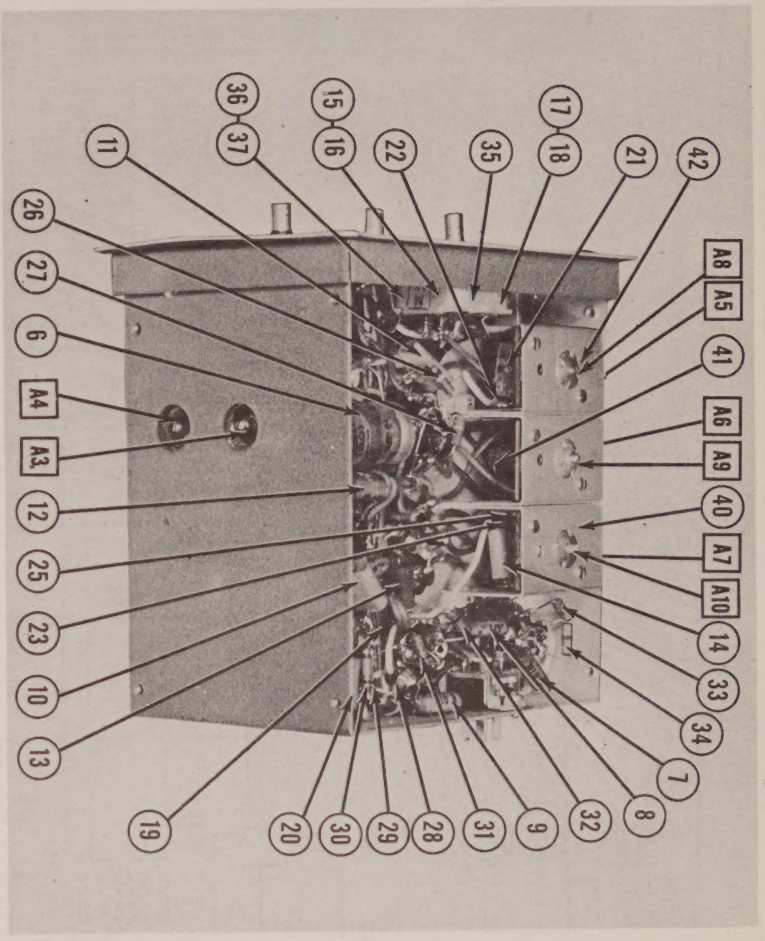
MISCELLANEOUS

ITEM No.	PART NAME	AIRADIO PART No.	NOTES
45	Tuning Cap.		3 Gang Var. Cap. "Tower-Voice-Range"
46	Switch Battery Pack	PWB-1D	

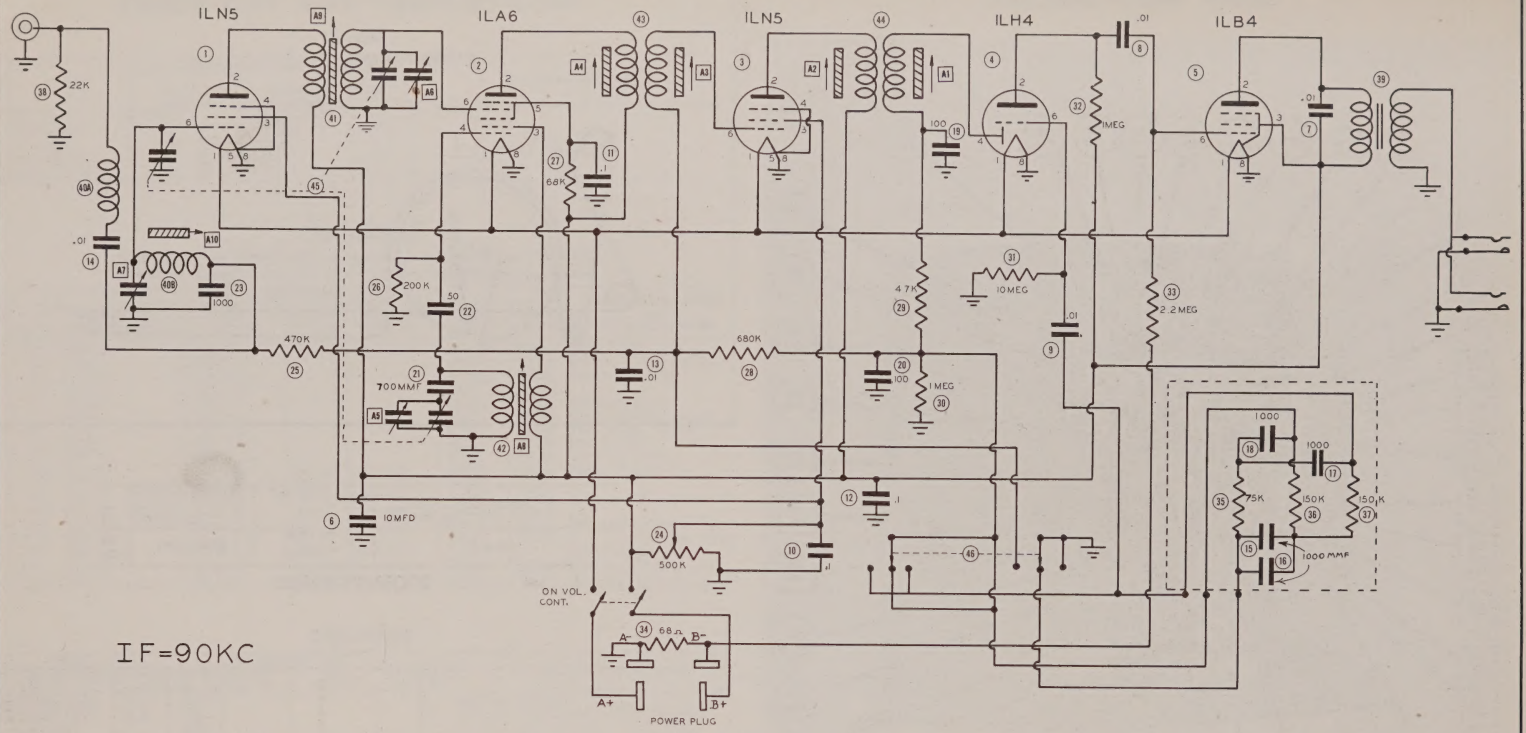


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



AIRADIO MODEL SU-41D



* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	ILN5	1.5V.DC	86V.DC	86V.DC	0V.	0V.	-1V.DC	-1V.DC	0V.
2	ILA6	1.5V.DC	86V.DC	86 V.DC	0V.	44V.DC	0V.	86V.DC	0V.
3	ILN5	1.5V.DC	86V.DC	86V.DC	0V.	0V.	-1V.DC	86V.DC	0V.
4	ILH4	1.5V.DC	57V.DC	86V.DC	-2V.DC	-1V.DC	-1V.DC	-1 V.DC	0V.
5	ILB4	1.5V.DC	88V.DC	86V.DC	0V.	-1V.DC	-1V.DC	-8V.DC	0V.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	ILN5	*	210 KΩ	210 KΩ	0Ω	0Ω	1.8MEG.	1.4MEG.	*
2	ILA6	*	210 KΩ	210 KΩ	215 KΩ	280 KΩ	43Ω	210 KΩ	*
3	ILN5	*	210 KΩ	210 KΩ	0Ω	0Ω	1.4MEG.	210 KΩ	*
4	ILH4	*	1.2MEG.	210 KΩ	930 KΩ	1.1MEG.	8 MEG.	1.4MEG.	*
5	ILB4	*	210 KΩ	210 KΩ	17Ω	2 MEG	2 MEG.	590Ω	*

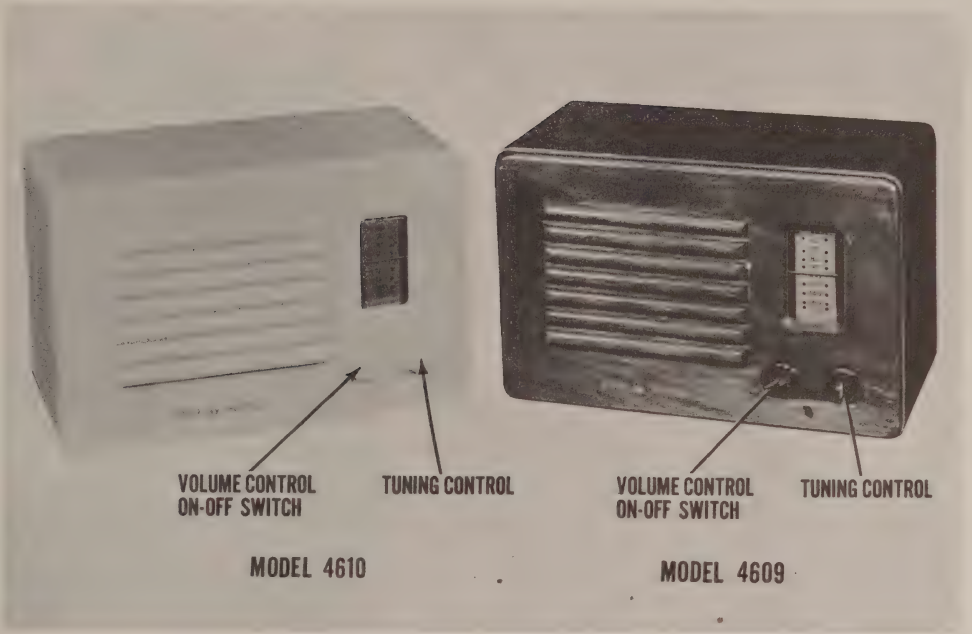
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

471-1

1 - DC Voltage measurements are at 20,000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.

AIR KING
MODELS 4609, 4610



AIR KING
MODELS 4609, 4610

AIR KING MODELS 4609, 4610

TRADE NAME	Air King, Models 4609, 4610
MANUFACTURER	Air King Products Co., Inc., 1523 63rd St., Brooklyn, N.Y.
TYPE SET	AC-DC Operated Superheterodyne Receiver
TUBES (FIVE)	Types, 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	540-1720KC RATING .225 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS

Use isolation transformer if available. If not, connect capacitor in series with the low side of the signal generator and chassis. Set volume control at maximum volume and keep input from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD.	High side to stator of rear section of variable. Low side to chassis.	455KC	High freq. end.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation trans. is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
200 MFD.	High side to ext. ant. Low side to chassis.	1600KC	1600KC	"	A5	Adjust for maximum output.
200 MFD.	"	1400KC	Tune for maximum output.	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter.	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR KING PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	2068	M-2x40-150	TA-440	PRSA150-40-40	BRD4415	2N511	Filter - Red
B	40	150							" - Blue
7	.05	400		S-4-05	TC-15	484-05	DT4S5	TP423	Line Filter
8	.01	400		S-4-01	TC-11	484-01	DT4S1	TP421	Output Plate Bypass
9	.02	400		S-4-02	TC-12	484-02	DT4S2	TP423	Audio Coupling
10	.002	600		S-6-002	TC-22	684-002	DT6D2	TP405	" "
11	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	RF Bypass Pwr. Supp.
12	.05	400		S-4-05	TC-15	484-05	DT4S5	TP423	AVC Filter
13	.001	600		S-6-001	TC-21	684-001	DT6D1	TP404	Audio Plate Bypass
14	.005	400		S-6-004	TC-25	484-005	DT6D5	TP408	Ant. Coupling
15	220	500		M0.5-32	1FM-32	1468-00002	5W5T2	MC237	IF Bypass Vol. Cont.
16	47	500		M0.5-45	1FM-45	1468-00005	5W5Q5	MC225	Osc. Grid Capacitor

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR KING PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	500KΩ	1		MR48	D13-133	M-60-Z	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 17A per instructions
C	Switch			M26	41	SW-A	" " " " "

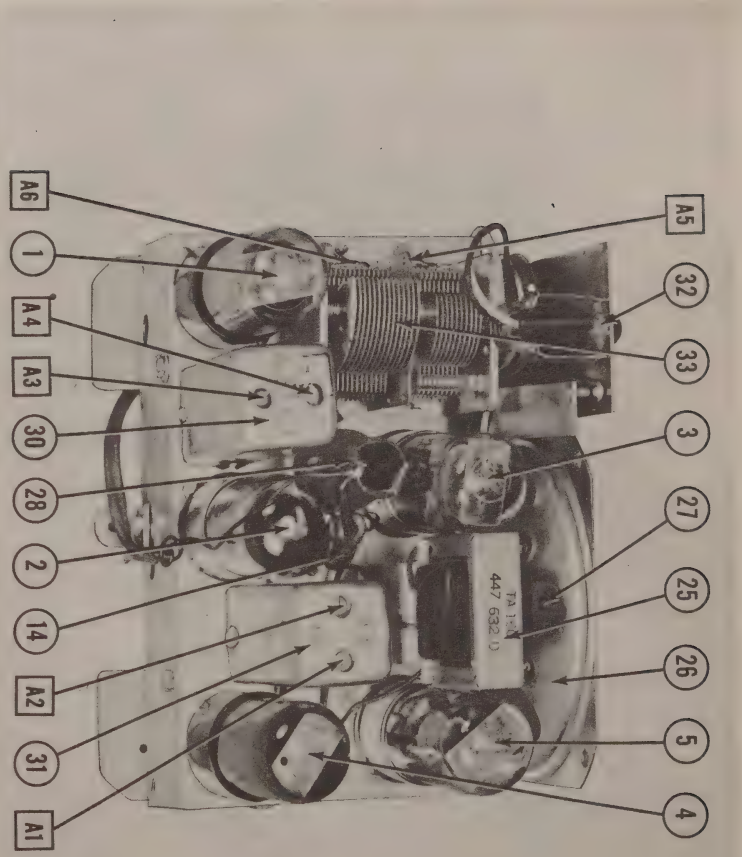
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
18	15KΩ	½		BTS-15K	br.-Grn.-Or. Oscillator Grid
19	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
20	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
21	220KΩ	½		BTS-220K	Red-Red-Yl. 1st AF Plate Load
22	150KΩ	½		BTS-150K	br.-Grn.-Yl. Output Grid
23	18Ω	½		BW-½-18	br.-Gray-Blk. Rectifier Ballast
24	2200Ω	1		BTA-2200	Red-Red-Red Filter

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.		INSTALLATION NOTES
25	2000Ω	2.9Ω	144Ω	.54Ω	Part of 5867	A-3876‡	T14S82‡		‡Bend mounting tabs down, file slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIR KING PART No.	JENSEN PART No.		
26	FIELD PM	VC IMP. 2.5Ω	5867	ST-113 Mod. P4-X		
27	CONE DIA. 3-15/16"	VC DIA. 1/2"	NOT READILY REPLACEABLE - USE COMPLETE SPEAKER UNIT.			

R F COILS

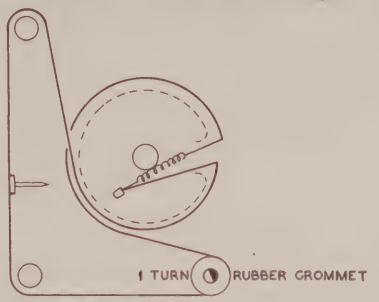
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	AIR KING PART No.	MEISSNER PART No.	
28	Ant. Coil	60Ω	5Ω			
29	Osc. Coil	4.5Ω		28149-5	14-1040	
30	Input IF	11.5Ω	13Ω	3364-A	16-6666	
31	Output IF	11.5Ω	11.5Ω	3365-A	16-6667	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					AIR KING PART No.		
32	Bayonet	6-8	0.15	Brown			Type 47

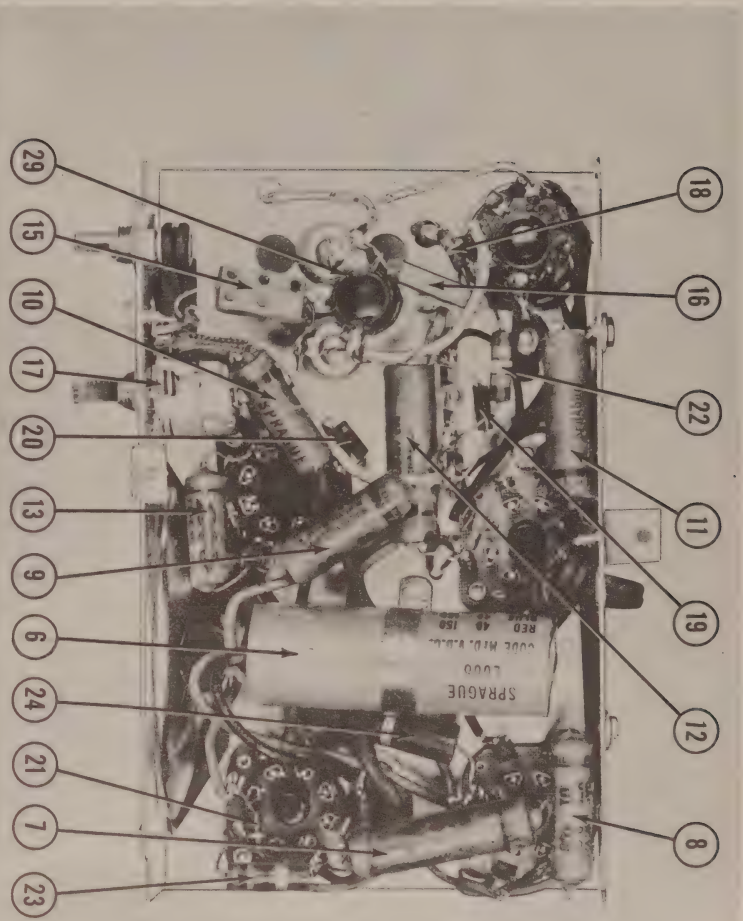
MISCELLANEOUS

ITEM No.	PART NAME	AIR KING PART No.	NOTES
33	2 Gang Var. Cap.	1662-D	Ant. & Osc. Trimmers Included

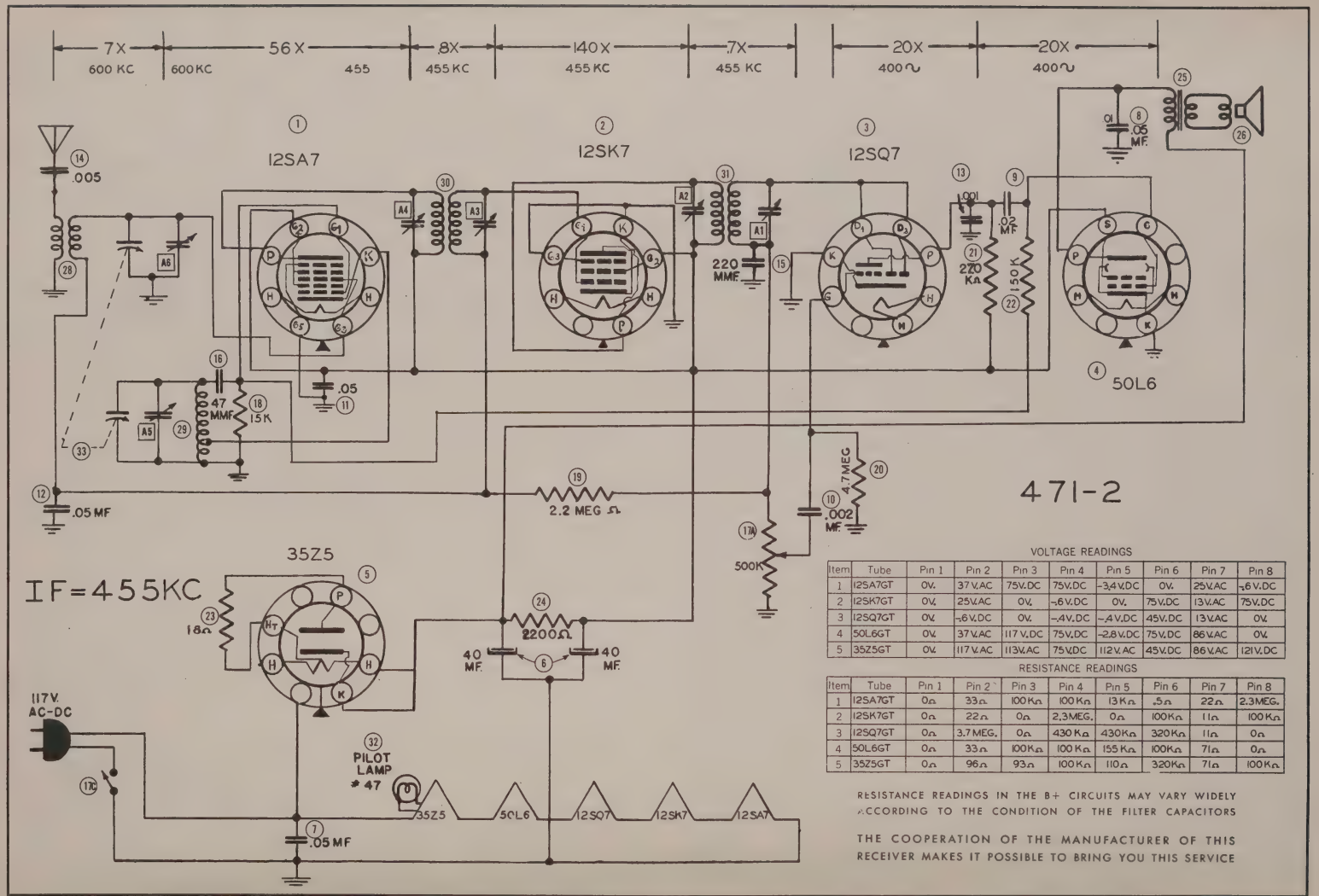


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



AIR KING MODELS 4609, 4610



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	37 V.AC	75V.DC	75V.DC	-3.4 V.DC	0V.	25V.AC	-6 V.DC
2	12SK7GT	0V.	25V.AC	0V.	-6 V.DC	0V.	75V.DC	13V.AC	75V.DC
3	12SQ7GT	0V.	-6 V.DC	0V.	-.4V.DC	-.4 V.DC	45V.DC	13V.AC	0V.
4	50L6GT	0V.	37 V.AC	117 V.DC	75V.DC	-2.8 V.DC	75V.DC	86 V.AC	0V.
5	35Z5GT	0V.	117 V.AC	113V.AC	75V.DC	112 V.AC	45V.DC	86 V.AC	121V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0Ω	33Ω	100KΩ	100KΩ	13KΩ	.5Ω	22Ω	2.3MEG.
2	12SK7GT	0Ω	22Ω	0Ω	2.3MEG.	0Ω	100KΩ	1Ω	100KΩ
3	12SQ7GT	0Ω	3.7MEG.	0Ω	430KΩ	430KΩ	320KΩ	1Ω	0Ω
4	50L6GT	0Ω	33Ω	100KΩ	100KΩ	155KΩ	100KΩ	71Ω	0Ω
5	35Z5GT	0Ω	96Ω	93Ω	100KΩ	110Ω	320KΩ	71Ω	100KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

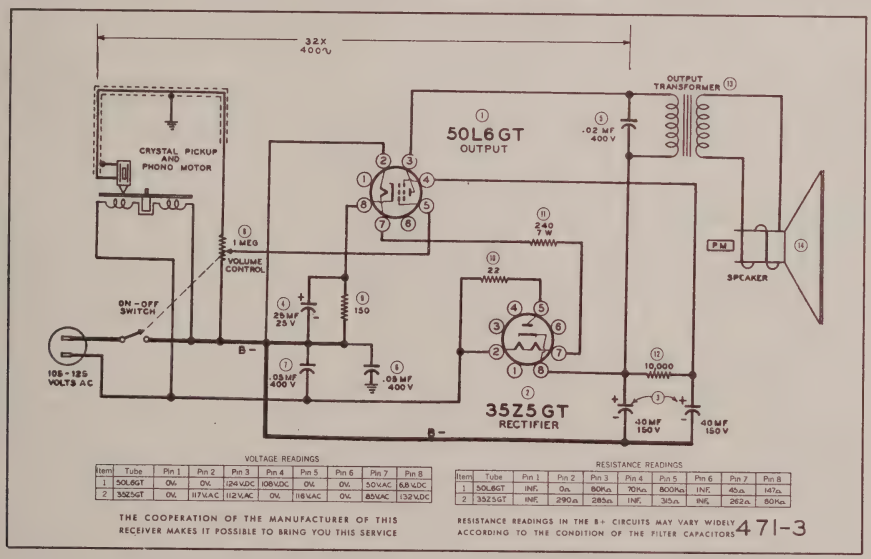
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

CORONADO MODEL 43-2027

TRADE NAME	Coronado Model 43-2027
MANUFACTURER	Coronado, Minneapolis, Minn. - Los Angeles, Calif.
TYPE SET	AC Operated Record Player with Two Tube Amp. & Speaker
TUBES (TWO)	Types, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC RATING .220 Amps. @ 117V AC



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	50L6GT	0V.	0V.	124 VDC	108 VDC	0V.	0V.	50 VAC	6.8 VDC
2	35Z5GT	0V.	117 VAC	112 VAC	0V.	116 VAC	0V.	85 VAC	132 VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	50L6GT	INF.	0Ω	80KΩ	70KΩ	800KΩ	INF.	40Ω	147Ω
2	35Z5GT	INF.	290Ω	285Ω	INF.	35Ω	INF.	262Ω	80KΩ

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

471-3

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Power Output	50L6GT	50L6GT	7AC	
2	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	CORONADO PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
3A	40	150	A-8C-11119	DY-2x40-150	EL-25	AF88D	UP4415	FP214	■ Filter
B	40	150							▲ "
4	25	25	A-8C-11678	M-25-25	TA-25	PRS25-25	BR252A	TC26	Cath. Bypass
5	.02	400	C-8D-10774	S-4-02	TC-12	484-02	DT4S2	TP423	50L6 Plate Bypass
6	.05	400	C-8D-10813	S-4-05	TC-15	484-05	DT4S5	TP426	Line Isolation
7	.05	400	C-8D-10813	S-4-05	TC-15	484-05	DT4S5	TP426	Line Filter

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	CORONADO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
8A	1 Meg.	1	A-10A-11555	MK402	D13-133	AM-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 8A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	CORONADO PART No.	IRC PART No.	IDENTIFICATION CODES
9	150Ω	½	C-9B1-52	BW-½-150	Br.-Grn.-Br. Output Cathode
10	22Ω	½	C-9B1-3	BW-½-22	Red-Red-Blk. Rectifier Ballast
11	240Ω	7½	B-9C-11559	AB-250	Line Dropping
12	10KΩ	½	C-9B1-74	BTS-10K	Br.-Blk.-Or. Filter

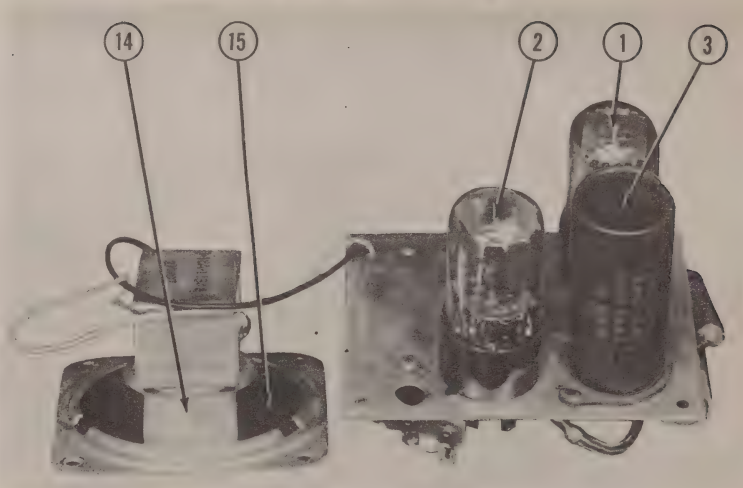
TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	CORONADO PART No.	STANCOR PART No.	THORDARSON PART No.		INSTALLATION NOTES
13	2300Ω	3.7Ω	190Ω	.7Ω	B-12C-10074-2	A-3876	T22S45		

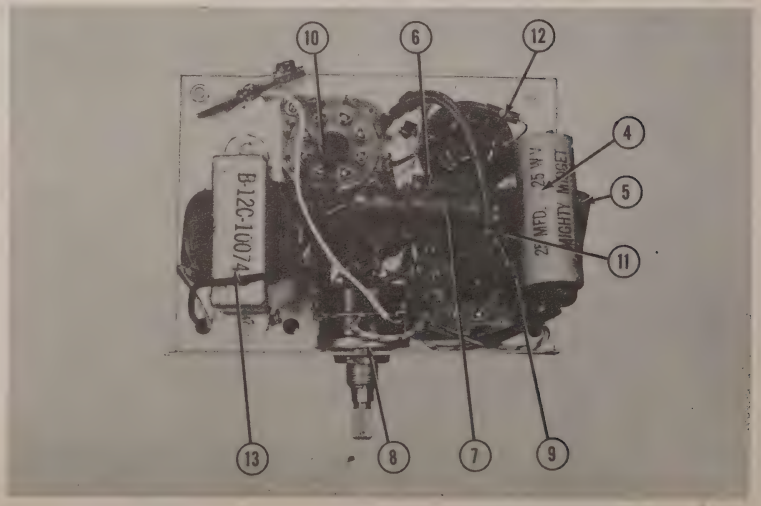
SPEAKER

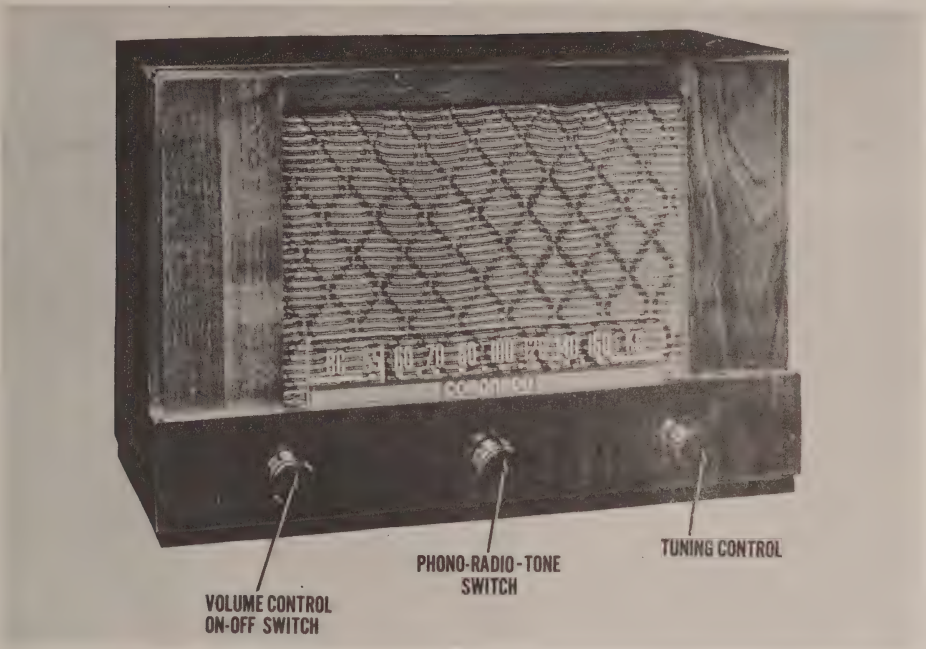
ITEM No.	RATINGS		CORONADO PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.				
14	PM	3.7Ω	B-18A-11546			
	CONE DIA.	VC DIA.				
15	3-3/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW





CORONADO
MODEL 43-8685

CORONADO
MODEL 43-8685

CORONADO MODEL 43-8685

TRADE NAME	Coronado, Model 43-8685
MANUFACTURER	Coronado, Minneapolis, Minn., and Los Angeles, Calif.
TYPE SET	AC Operated Superheterodyne Receiver - Self contained Loop Antenna
TUBES (SIX)	Types 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp.,6SQ7 Det-AVC-AF, 6V6GT Power Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC RATING .500 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535 - 1620 KC

ALIGNMENT INSTRUCTIONS

Set volume control at maximum volume and keep output from signal generator no higher than is necessary to obtain output reading. Keep chassis and loop in the same relative position as they are in when mounted in the cabinet. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 Mfd	High side to pin #8 (grid) of 6SA7. Low side to chassis.	455KC	High freq. end (Tuning control full clockwise)	Across Voice Coil	A1, A2, A3, A4	Adjust for maximum output.
100 MMF	High side to ant. clip. Low side to chassis.	1620KC	"	"	A5	" " " "
"	"	1400KC	Tune for max. output	"	A6, A7	" " " "

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det-AVC-AF	6SQ7	6SQ7	8Q	
5	Power Output	6V6GT	6V6GT	7AC	
6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CORONADO PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	15	450	25688	DY-312	EL-353	AF44J	UP6BJ38	FP339	■ Filter
B	15	450							▲ "
C	20	25				PRS25-25	BR202A		Cathode Bypass
8	.005	600		S-6-005	TC-25	684-005	DT6D5	TP408	Line Bypass
9	.005	600		S-6-005	TC-25	684-005	DT6D5	TP408	" "
10	.05	200		S-4-05	TC-15	484-05	DT4S5	TP426	Audio Coupling
11	.005	400		S-6-005	TC-25	484-005	DT6D5	TP408	Tone Compensation
12	.01	400		S-4-01	TC-11	484-01	DT4S1	TP421	" "
13	.005	400		S-6-005	TC-25	484-005	DT6D5	TP408	Audio Coupling
14	.05	600		S-6-05	TC-15	684-05	DT6S5	TP415	" "
15	.1	400		S-4-1	TC-1	484-.1	DT4P1	TP423	Screen Bypass
16	.05	200		S-4-05	TC-15	484-05	DT4S5	TP426	IF Cathode Bypass
17	.05	200		S-4-05	TC-15	484-05	DT4S5	TP426	AVC Filter
18	.05	200		S-4-05	TC-15	484-05	DT4S5	TP426	AVC Filter
19	.05	200		S-4-05	TC-15	484-05	DT4S5	TP426	AVC Filter
20	.01	400		S-4-01	TC-11	484-01	DT4S1	TP421	Ant. Coupling
21	200	500		MO.5-32	1FM-32	1468-0002	5W5T2	MC237	Audio Plate Bypass
22	100	500		MO.5-31	1FM-31	1468-0001	5W5T1	MC235	Osc. Grid Capacitor

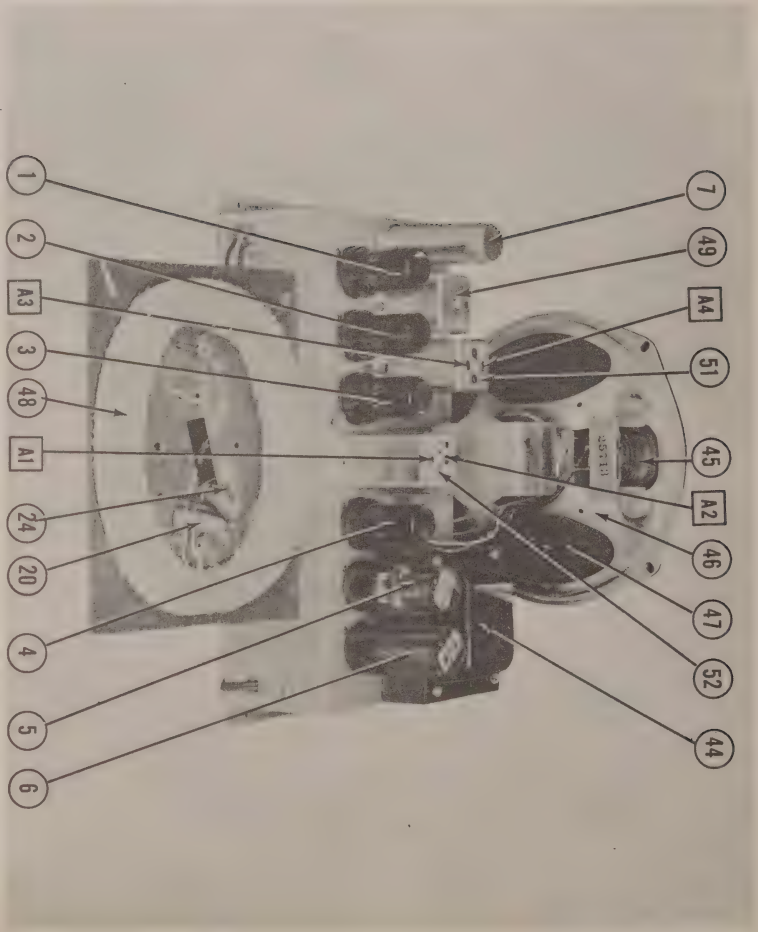
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CORONADO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23A	2.2Meg	1	25690	T1254	D13-139X	T-115	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 23A per Instr.
C	Switch		" "	M26	41	SW-A	" " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CORONADO PART No.	IRC PART No.	IDENTIFICATION CODES	
24	1000Ω	½		BTS-1000	Br. - Blk. - Red	Antenna Loading
25	100KΩ	½		BTS-100K	Br. - Blk. - Yl.	AVC Network
26	470Ω	½		BTS-470	Yl. - Vi. - Br.	RF Cathode
27	100KΩ	½		BTS-100K	Br. - Blk. - Yl.	AVC Network
28	22KΩ	½		BTS-22K	Red - Red - Or.	Oscillator Grid
29	470Ω	½		BW-1-470	Yl. - Vi. - Br.	IF Cathode
30	22KΩ	2		BT-2-22K	Red - Red - Or.	Screen Dropping
31	1 Meg	½		BTS-1 Meg	Br. - Blk. - Grn.	AVC Network
32	470KΩ	½		BTS-470K	Yl. - Vi. - Yl.	Diode Load
33	15 Meg	½		BTS-15 Meg	Br. - Grn. - Blue	1st AF Grid
34	220KΩ	½		BTS-220K	Red - Red - Yl.	1st AF Plate Load
35	1 Meg	½		BTS-1 Meg	Br. - Blk. - Grn.	Feedback
36	220KΩ	½		BTS-220K	Red - Red - Yl.	Output Grid
37	330Ω	2		BW-2-330	Or. - Or. - Br.	Output Cathode
38	2.2 Meg	½		BTS-2.2Meg	Red - Red - Grn.	Tone Compensation
39	22KΩ	½		BTS-22K	Red - Red - Or.	" "
40	33KΩ	½		BTS-33K	Or. - Or. - Or.	" "
41	470KΩ	½		BTS-470K	Yl. - Vi. - Yl.	Series Phono
42	1 Meg	½		BTS-1 Meg	Br. - Blk. - Grn.	Phono Shunt
43	3.3Ω	½		BW-½-3.3	Or. - Or. - Gold	Series Pilot Light

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	SEC. 3	CORONADO PART No.	STANCOR PART No.	THORDARSON PART No.	
44	117VAC @ .5 A	620VCT @.062A	5.1VAC @1.8A	6.4VAC @ 1.9A	25723	P-61201*	T-22R02*	*Drill new mounting holes. † Use universal mounting brackets.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CORONADO PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
45	3300Ω	3.3Ω	240Ω	.25Ω	25713	A-3823	T22S46		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CORONADO PART No.	JENSEN PART No.		
46	Field Res. 800Ω	V.C.Imp. 3.3Ω	25712	ST-4351 Mod.PS-RS		†Shunt Field Coil With 4000Ω 2Watt Resistor.
47	Cone Dia. 7 3/8"	V.C.Dia. 3/4"	NOT READILY REPLACEABLE UNIT - USE COMPLETE SPEAKER UNIT			

R F COILS

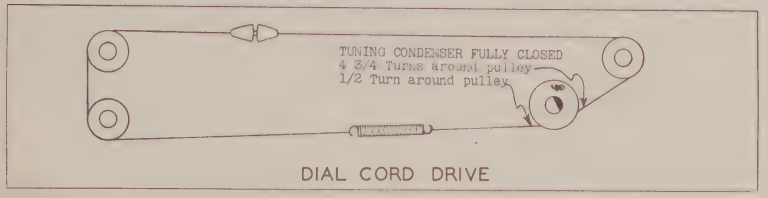
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	CORONADO PART No.	MEISSNER PART No.	
48	Loop Ant.	3Ω	.7Ω	25682		
49	RF Coil	72Ω	6Ω	25597	14-7558	
50	Osc. Coil		6Ω	25724	14-1040	
51	Input IF	28.8Ω	28.5Ω	25715	16-6658	
52	Output IF	32Ω		25714	16-6670	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					CORONADO PART No.		
53	Bayonet	6-8	0.15	Brown	25576		Type 47
54	Bayonet	6-8	0.15	Brown	25576		Type 47

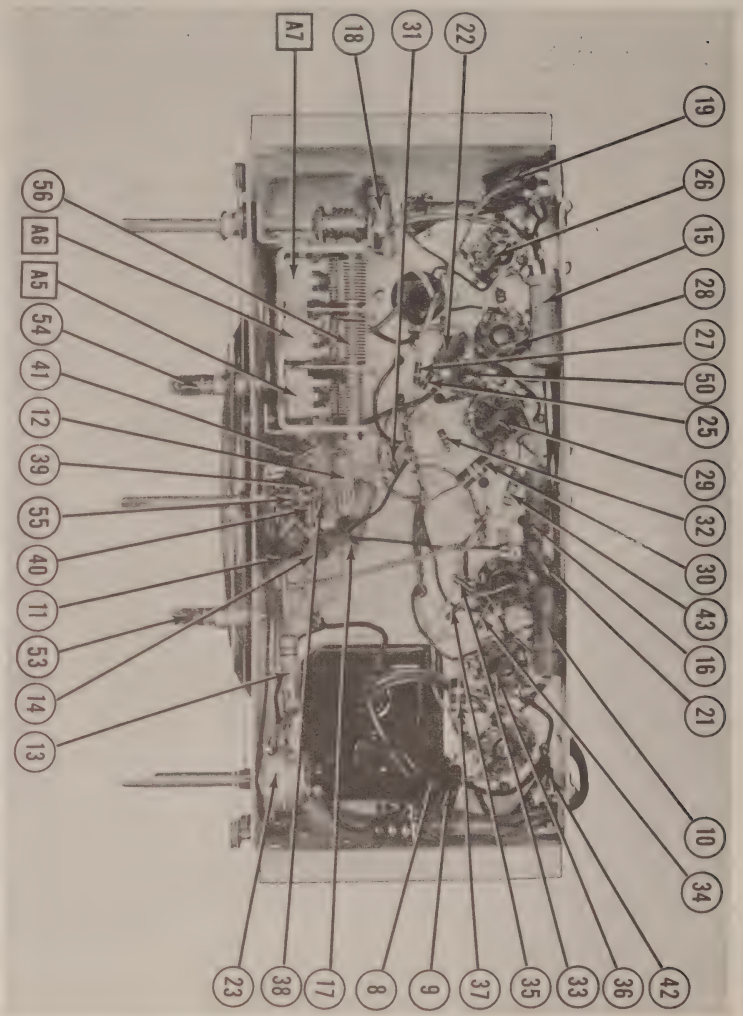
MISCELLANEOUS

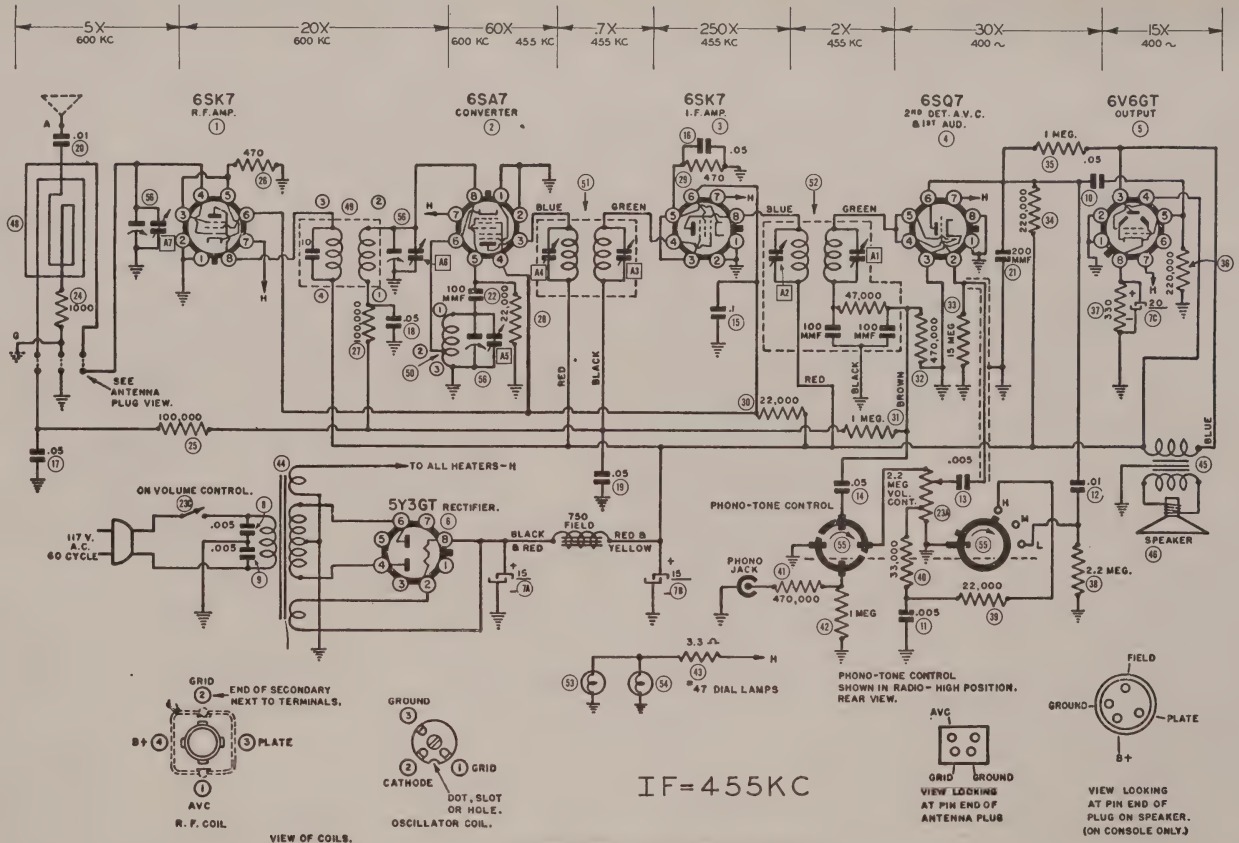
ITEM No.	PART NAME -	CORONADO PART No.	NOTES
55	Radio-Tone Sw.	25562	
56	3-Gang Var. Cap. Dial Pointer	25592 25576	Trimmers Included



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





NOTE: VOLTAGE AND RESISTANCE READINGS TAKEN IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	3.2V.DC	−2.2V.DC	3.2V.DC	75V.DC	6.4V.AC	275V.DC
2	6SA7	0V.	0V.	275V.DC	75V.DC	−3.2V.DC	0V.	6.4V.AC	−3V.DC
3	6SK7	0V.	0V.	2.8V.DC	−3V.DC	2.8V.DC	75V.DC	6.4V.AC	275V.DC
4	6SQ7	0V.	−5V.DC	0V.	−45V.DC	−45V.DC	125V.DC	6.4V.AC	0V.
5	6V6GT	0V.	0V.	265V.DC	275V.DC	0V.	0V.	6.4V.AC	15V.DC
6	5Y3GT	0V.	330V.DC	0V.	310V.AC	0V.	310V.AC	0V.	330V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	400Ω	1.5 MEG.	400Ω	162KΩ	1Ω	140KΩ
2	6SA7	0Ω	0Ω	140KΩ	162KΩ	18KΩ	.5Ω	1Ω	1.5 MEG.
3	6SK7	0Ω	0Ω	400Ω	1.4 MEG.	400Ω	162KΩ	1Ω	140KΩ
4	6SQ7	0Ω	1.5 MEG.	0Ω	460KΩ	460KΩ	360KΩ	1Ω	0Ω
5	6V6GT	0Ω	0Ω	140KΩ	140KΩ	240KΩ	INF.	1Ω	300Ω
6	5Y3GT	INF.	140KΩ	INF.	145Ω	INF.	155Ω	INF.	140KΩ

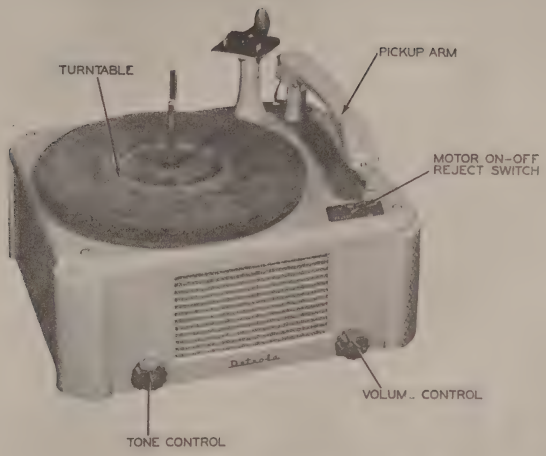
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

471-4

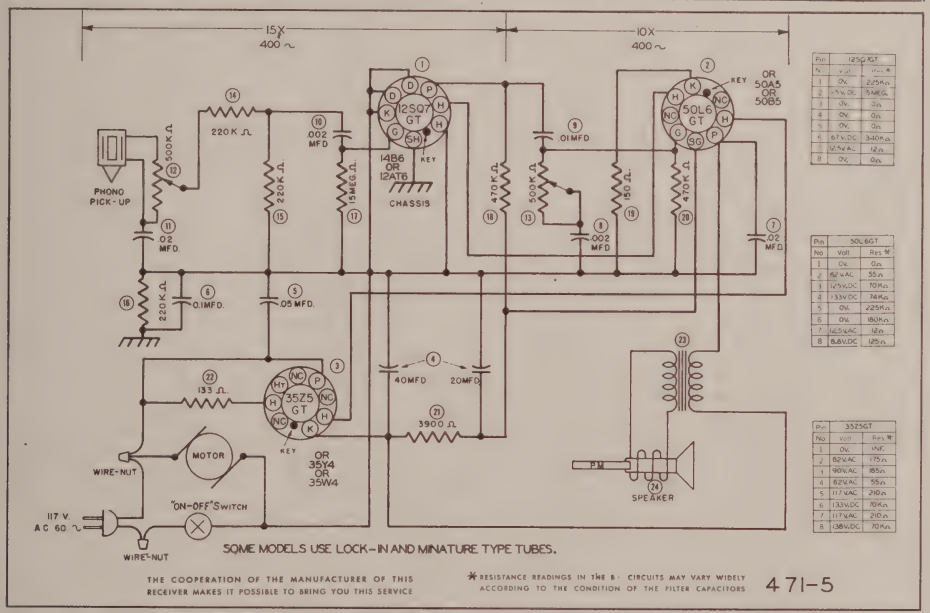
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**



DETROLA MODEL 626 SERIES

TRADE NAME	Detrola, Model 626 Series
MANUFACTURER	International Detrola Corp., 1501 Beard St., Detroit, Michigan
TYPE-SET	AC Operated Record Player with 3 Tube Amplifier and Speaker
TUBES	Types, 12AT6 AF Amp. or 12SQ7GT or 14B6, 50B5 Power Output or 50L6GT or 50A5, 35W4 Rectifier or 35Z5GT or 35Y4
POWER SUPPLY	117 Volts AC RATING - .260 Amp. @ 117 Volts AC



Pin No	12SQ7GT Volt	Res.*
1	0V.	225Ω
2	75V. DC	5MEG.
3	0V.	0Ω
4	0V.	0Ω
5	0V.	0Ω
6	67V.DC	340KΩ
7	6.5V.AC	1Ω
8	0V.	0Ω

Pin No	50L6GT Volt	Res.*
1	0V.	0Ω
2	62V.AC	55Ω
3	125V.DC	70KΩ
4	133V.DC	74KΩ
5	0V.	225KΩ
6	0V.	180KΩ
7	6.5V.AC	1Ω
8	8.6V.DC	125Ω

Pin No	35Z5GT Volt	Res.*
1	0V.	INF.
2	62V.AC	175Ω
3	90V.AC	185Ω
4	62V.AC	55Ω
5	117V.AC	210Ω
6	133V.DC	70KΩ
7	117V.AC	210Ω
8	138V.DC	70KΩ

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: DETROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1A	AF Amp.	12SQ7GT	12SQ7GT	8N	Octal
B	AF Amp.	14B6	14B6	8W	Lock-in
C	AF Amp.	12AT6	12AT6	7BT	Miniature
2A	Power Output	50L6GT	50L6GT	7AC	
B	Power Output	50A5	50A5	6AA	
C	Power Output	50B5	50B5	7BZ	
3A	Rectifier	35Z5GT	35Z5GT	6AD	
B	Rectifier	35Y4	35Y4	5AL	
C	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DETROLA PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
4A	40	150	B-9564-1	M-40+20-150	TA-240	PRSA150-40-D	BRL4215	2N514	Filter-Red *
B	20	150							" -Blue
4A	40	150	A-8948 ‡	DY-40+20-150	EL-24	AF84D20A ‡		FP306	◀ " Filter †
B	20	150							▲ "
5	.05	400	BC395503	S-4-05	TC-15	484-05	DT4S5	TP428	Line Filter
6	.1	400	BD410104	S-4-1	TC-1	484-.1	DT4P1	TP428	Line Isolating
7	.02	400	BD410203	S-4-02	TC-12	484-02	DT4S2	TP423	50L6 Plate Bypass
8	.002	600	BD610202	S-6-002	TC-22	684-002	DT6D2	TP405	Tone Compensation
9	.01	400	BD410103	S-4-01	TC-11	484-01	DT4S1	TP421	Audio Coupling
10	.002	600	BD610202	S-6-002	TC-22	684-002	DT6D2	TP405	" "
11	.02	400	BD410203	S-4-02	TC-12	484-02	DT4S2	TP423	Phono Coupling

*Used in Model 626-20-1169B. †Used in Model 626-12-1164. ‡Do not use bypass section.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DETROLA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
12A	500KΩ	1	B54466-1	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 12A per instructions
13A	500KΩ	1	B54466-1	MR48	D13-133	M-60-Z	Tone Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 13A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DETROLA PART No.	IRC PART No.	IDENTIFICATION CODES
14	220KΩ	1/3	BR17B224	BTS-220K	Red-Red-Yl. Phono Input Voltage Divider
15	220KΩ	1/3	BR17B224	BTS-220K	Red-Red-Yl. " " "
16	220KΩ	1/3	BR17B224	BTS-220K	Red-Red-Yl. Line Isolating
17	15 Meg.	1/3	BR17B156	BTS-15 Meg.	Br.-Grn.-Blue 1st AF Grid
18	470KΩ	1/3	BR17B474	BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
19	150Ω	1	BR16E151	BW-1-150	Br.-Grn.-Br. Output Cathode
20	470KΩ	1/3	BR17B474	BTS-470K	Yl.-Vi.-Yl. Output Grid
21	3900Ω	1/2	BR16C392	BTS-3900	Or.-White-Red Filter - See Note 1
22	133Ω	5	A-9528	AB-150	Line Dropping

Note 1 - Some models use a 1000Ω resistor in this application.

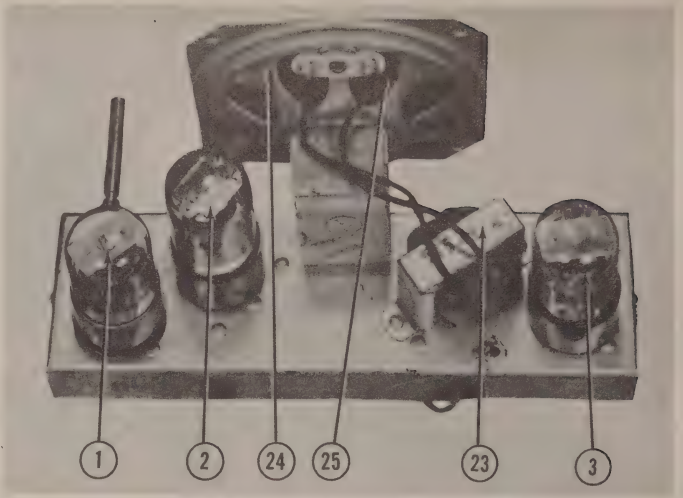
TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: DETROLA PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
23	2500Ω	3.4Ω	180Ω	.8Ω	B-51578-2	A-3876	T-22845		

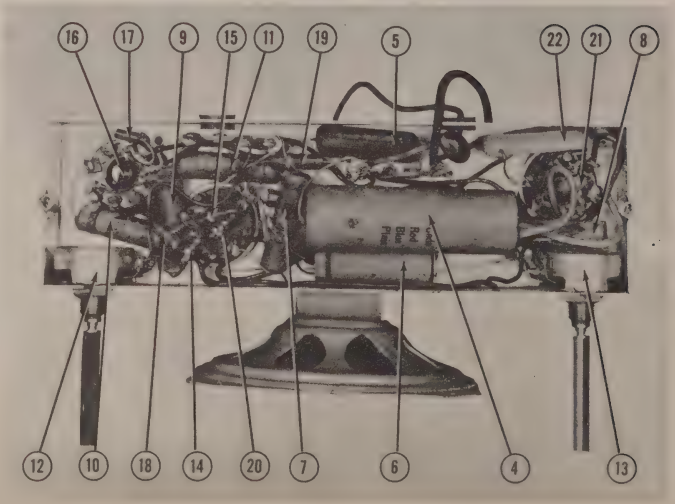
SPEAKER

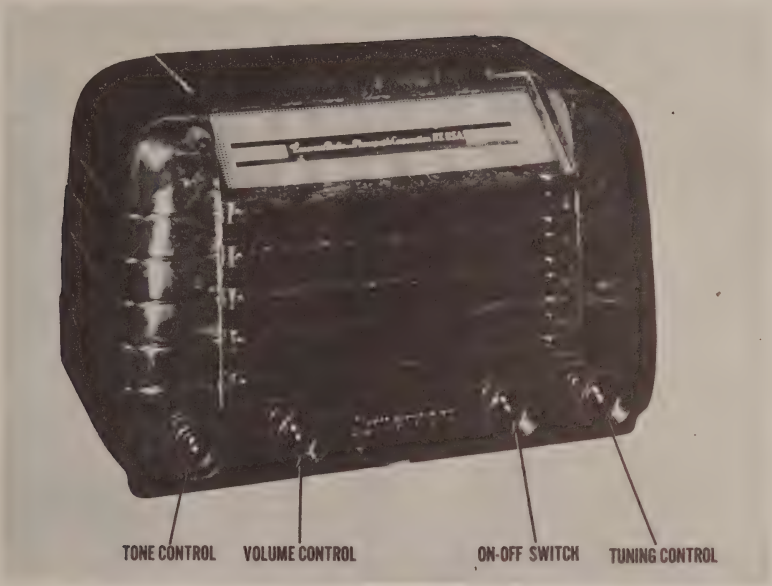
ITEM No.	RATINGS		REPLACEMENT DATA: DETROLA PART No.	JENSEN PART No.		INSTALLATION NOTES
24	FIELD	VC IMP.	C-56029	ST-113		
	PM	3.4Ω		Mod.P4-X		
25	CONE DIA.	VC DIA.	NOT READILY	REPLACEABLE-USE COMPLETE SPEAKER UNIT.		
	4"	1/2"				

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW





EMERSON MODEL 532

TRADE NAME	Emerson Models 531, 532, 533
MANUFACTURER	Emerson Radio & Phono. Corp., 111 8th Ave., New York, N.Y.
TYPE SET	Battery Operated Superheterodyne Receiver
TUBES (FIVE)	Types, 1T4 RF Amp., 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3Q4 Power Output.
POWER SUPPLY	1.5 Volt "A" Supply & 90 Volt "B" Supply in Battery Pack Form (Eveready No. 758 or equiv.)
RATING	325 MA @ 1.6V DC & 14.7 MA @ 88V DC
TUNING RANGE—BROADCAST	530-1625KC

ALIGNMENT INSTRUCTIONS

To set pointer, turn variable fully closed and set pointer at the last reference mark at the left end of the dial backplate. Set volume control at maximum volume and keep input from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator of rear section of variable. Low side to chassis.	455KC	Variable fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
200 MMFD	High side to ext. ant. lead. Low side to ground lead.	"	Variable fully closed	"	A5	Adjust for minimum output.
200 MMFD	"	1425KC	2nd mark from right end of dial back plate	"	A6	Adjust for maximum output.
200 MMFD	"	"	Tune for maximum output.	"	A7	" " " "

EMERSON
MODELS 531, 532, 533

EMERSON
MODELS 531, 532, 533

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		EMERSON PART No.	STANDARD REPLACEMENT		
1	RF Amplifier	1T4	1T4	6AR	
2	Converter	1R5	1R5	7AT	
3	IF Amplifier	1T4	1T4	6AR	
4	Det.-AVC-AF	1S5	1S5	6AU	
5	Power Output	3Q4	3Q4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	EMERSON PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	
6	16	150		M-16-150	UT-161	PRS150-16	BR1615	TC44	Pwr. Supp. Bypass
7	.001	600		S-6-001	TC-21	684-001	DT6D1	TP404	Output Plate Bypass
8	.02	200		S-4-02	TC-12	484-02	DT4S2	TP423	Audio Coupling
9	.02	200		S-4-02	TC-12	484-02	DT4S2	TP423	Audio Screen Bypass
10	.002	600		S-6-002	TC-22	684-002	DT6D2	TP405	Audio Coupling
11	.1	200		S-4-1	TC-1	484-1	DT4R1	TP428	AVC Filter
12	.02	200		S-4-02	TC-12	484-02	DT4S2	TP423	Conv. Screen Bypass
13	.02	200		S-4-02	TC-12	484-02	DT4S2	TP423	Screen Bypass
14	.001	600		S-6-001	TC-21	684-001	DT6D1	TP404	Ant. Coupling
15	50	500		M0.5-45	1FM-45	1468-00005	5W5Q5	MC225	Tone Compensation
16	220	500		M0.5-32	1FM-32	1468-0002	5W5T2	MC237	Audio Plate Bypass
17	110	500		M0.5-31	1FM-31	1468-0001	5W5T1	MC235	IF Bypass Vol. Cont.
18	220	500		M0.5-32	1FM-32	1468-0002	5W5T2	MC237	RF Coupling

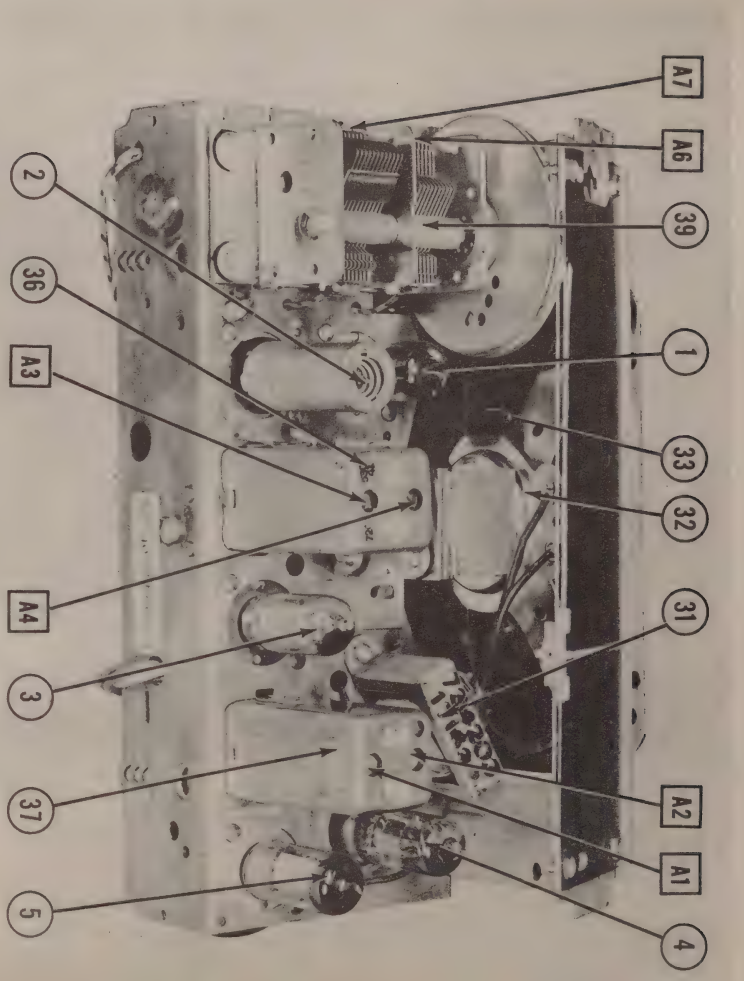
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	EMERSON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
19A	500KΩ	1	390180	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 19A per instructions.
20A	500KΩ	1	390280	MK401	D13-133	AM-60-Z	Tone Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 20A per instructions.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	EMERSON PART No.	IRC PART No.	
21	10KΩ	½		BTS-10K	Br.-Blk.-Or. RF Plate Load
22	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Oscillator Grid
23	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Converter Grid
24	10KΩ	½		BTS-10K	Br.-Blk.-Or. Converter Screen Dropping
25	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
26	15KΩ	½		BTS-15K	Br.-Grn.-Or. Screen Dropping
27	470Ω	½		BTS-470	Yl.-Vi.-Br. Bias
28	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
29	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
30	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn. AF Screen Dropping

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA EMERSON PART No.	STANCOR PART No.	THORDAR'N PART No.	INSTALLATION NOTES
31	10000Ω	4.6Ω	470Ω	.5Ω	734203	A-3879	T22847	

SPEAKER

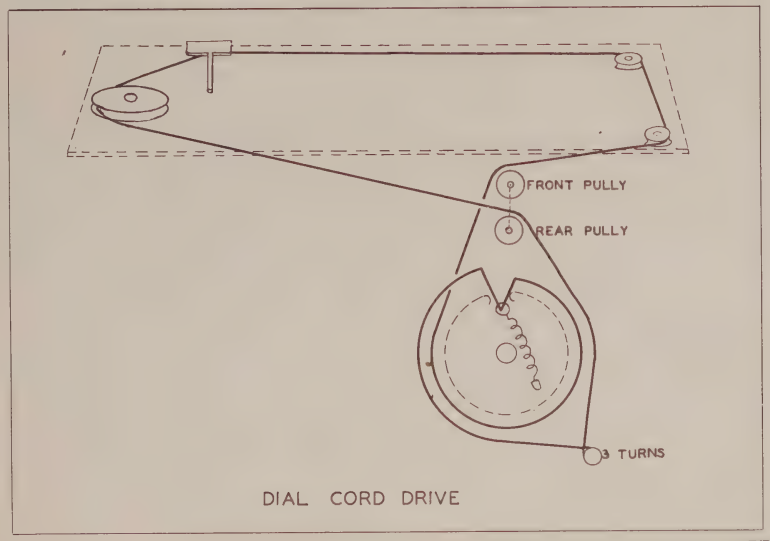
ITEM No.	RATINGS		REPLACEMENT DATA EMERSON PART No.	JENSEN PART No.		INSTALLATION NOTES
32	FIELD PM.	VC IMP. 4.3Ω	180008			
33	CONE DIA. 4"xo"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA EMERSON PART No.	MEISSNER PART No.	INSTALLATION NOTES
34	Ant. Coil	1Ω	5Ω			
35	Osc. Coil	2.5Ω	6.5Ω			
36	Input IF	3Ω	22.5Ω	720530	16-6666	
37	Output IF	3Ω		720531	16-6670	

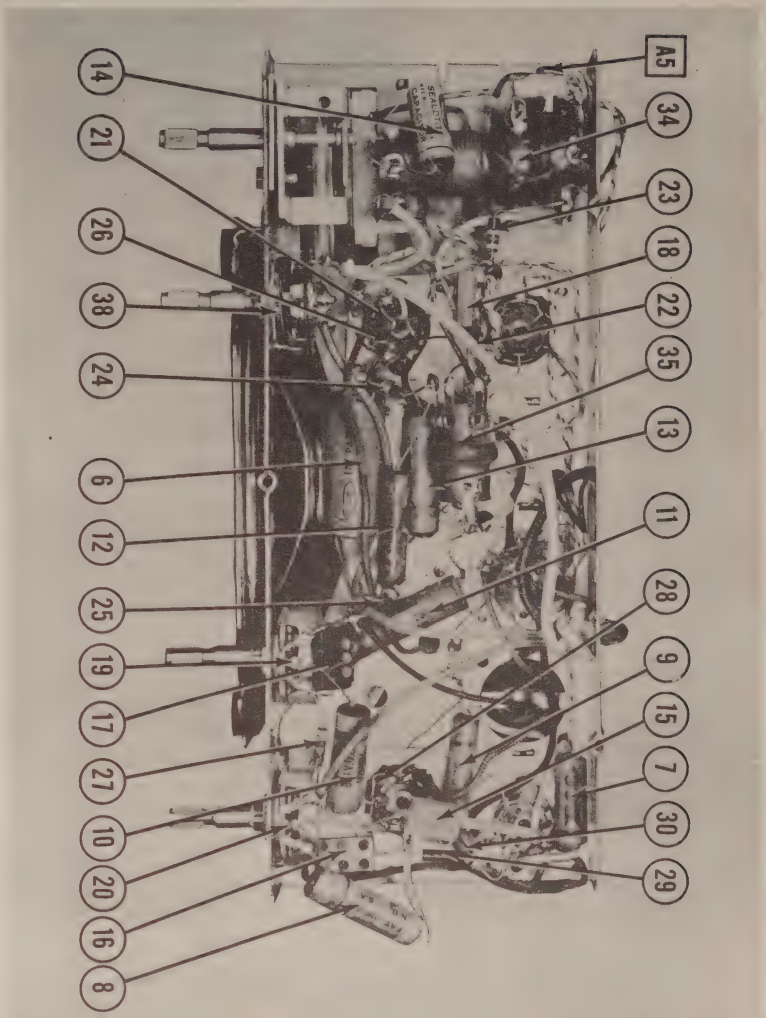
MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
38	Switch		On-Off
39	Tuning Cap.		2 Gang Var. Cap.

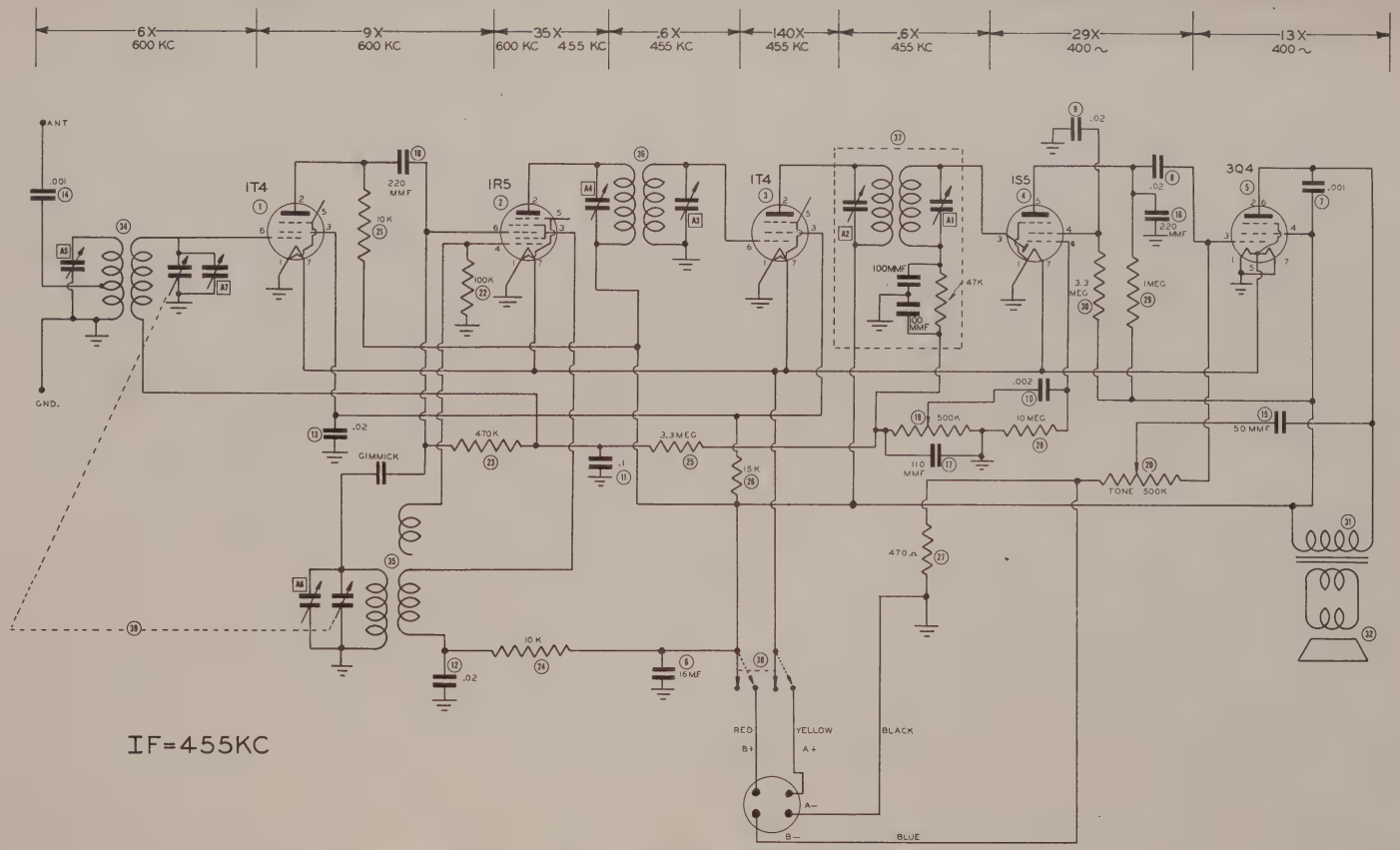


DIAL CORD DRIVE

CHASSIS—TOP VIEW



EMERSON MODEL 532



* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1T4	0V.	61V.DC	62V.DC	88V.DC	0V.	0V.	1.6V.DC
2	1R5	0V.	88V.DC	63V.DC	0V.	0V.	0V.	1.6V.DC
3	1T4	0V.	88V.DC	62V.DC	88V.DC	0V.	0V.	1.6 V.DC
4	1S5	0V.	0V.	-.4V.DC	17V.DC	14 V.DC	0V.	1.6V.DC
5	3Q4	0V.	87 V.DC	-3.2V.DC	88V.DC	1.6V.DC	87 V. DC	0V.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1T4	*	90KΩ	80KΩ	80KΩ	*	4 MEG.	*
2	1R5	*	80KΩ	90KΩ	120KΩ	*	4 MEG.	*
3	1T4	*	80KΩ	80KΩ	80KΩ	*	20Ω	*
4	1S5	*	INF.	570KΩ	3 MEG.	950KΩ	8 MEG.	*
5	3Q4	*	80KΩ	410KΩ	80KΩ	*	80KΩ	*

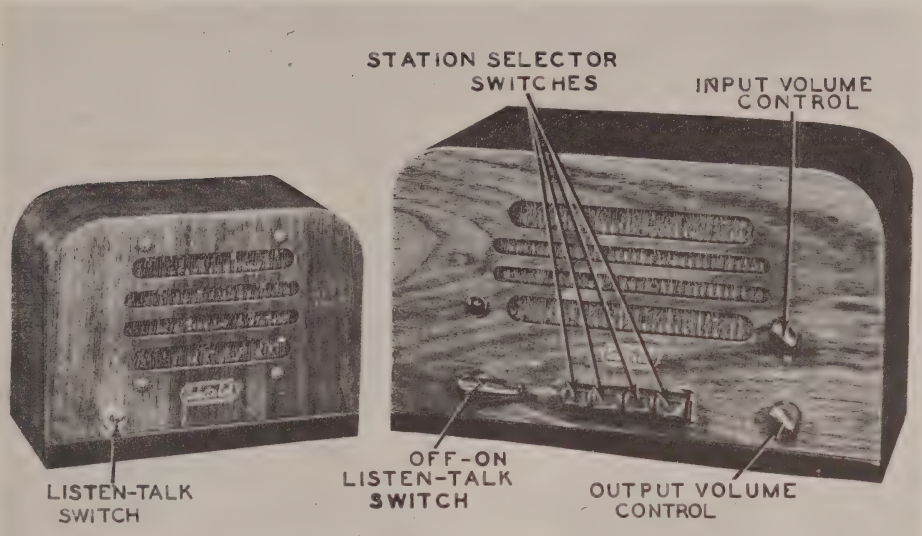
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

471-6

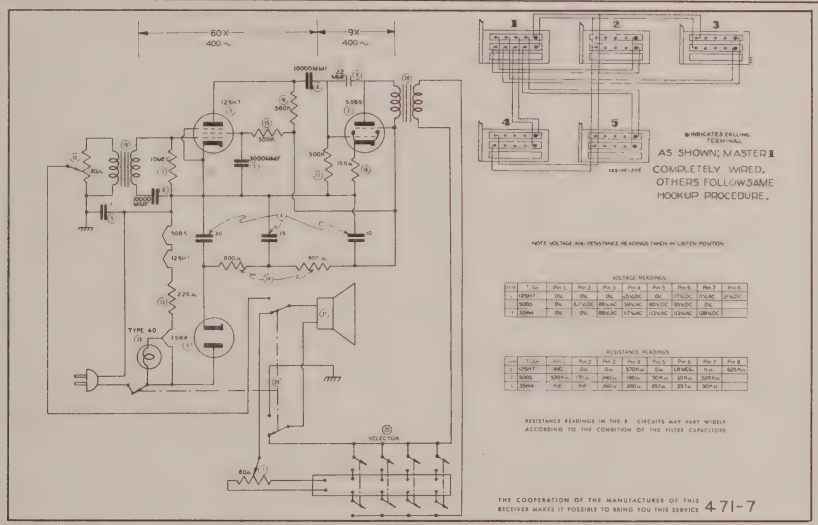
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting to chassis.

1 - DC Voltage measurements are at 20,000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.



FEDERAL (SELECT-A-CALL) MODEL 135

TRADE NAME	Federal Model 135 Select-A-Call
MANUFACTURER	Federal Mfg. & Electronic Co., 5914 N. Western Ave., Chicago 45, Ill.
TYPE SET	AC - DC Operated Inter-Communication System
TUBES (THREE)	Types, 12SH7 Audio Amp., 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC RATING .190 Amps. @ 117V AC


60 X
400 ~
9X
400 ~
AS SHOWN; MASTER I COMPLETELY WIRED. OTHERS FOLLOW SAME HOOKUP PROCEDURE.
VOLTAGE READINGS
RESISTANCE READINGS
THE COOPERATION OF THE MANUFACTURERS OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
471-7

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: FEDERAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Audio Amp.	12SH7	12SH7	8BK	
2	Power Output	50B5	50B5	7BZ	
3	Rectifier	35W4	35W4	5BC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FEDERAL PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
4A	30	250		DY-3X20-450	EL-432	AF444J	UP6CJ45	FP363	Filter - Red Dot
B	15	250							" - Blue Dot
C	10	250							" - Grn. Dot
5	.1	600		S-6-1	TC-1	684-.1	DT5P1	TP418	Line Isolation
6	10000	100		S-4-01	TC-11	1467-01	DT4S1	TP421	Audio Coupling
7	3000	500		MW.5-23	1FM-23	1468-003	1W5D3	MC461	Audio Screen Bypass
8	10000	100		S-4-01	TC-11	1467-01	DT4S1	TP421	Input Trans. Coupling
9	22	500		M0.5-425	MS-42	1468-000025	5W5Q2	MC220	Feedback

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FEDERAL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
10&11A	60Ω	2	630411	V	W-60	58-60	Input & Output Vol. Cont.-Later Prod.
10&11B	20Ω	2		T	W-20	58-20	" " " " " -Early Prod.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FEDERAL PART No.	IRC PART No.	IDENTIFICATION CODES
12A	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AF Amplifier Grid-Used in early prod
B	560KΩ	½		BTS-560K	Grn.-Blue-Yl. AF Amplifier Grid-Used in later prod
13	220Ω	5		AB-250†	Line Dropping
14	1000Ω	10		AB-1000*	Filter-See Note 1
15A	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. AF Screen Dropping-Used in early prod
B	2 Meg	½		BTS-2.2 Meg.	Red-Blk.-Grn. " " " -Used in later prod
16	560KΩ	½		BTS-560K	Grn.-Blue-Yl. AF Plate Load
17	560KΩ	½		BTS-560K	Grn.-Blue-Yl. Output Grid
18	200Ω	½		BW-½-220	Red-Blk.-Br. Output Cathode

Note 1 - Some models use two 600Ω resistors in this application.
* - Set slider at center. † - Set slider at 220Ω from one end.

TRANSFORMER (INPUT)

ITEM NO.	RATING: RES. PRI.	RATING: RES. SEC.	RATING: TURNS RATIO PRI. TO SEC.	REPLACEMENT DATA: FEDERAL PART NO.	STANCOR PART NO	THORDARSON PART NO.	INSTALLATION NOTES
19	1.3Ω	270Ω	1 to 141		A-4743‡	T20A04‡	‡Drill new mounting holes.

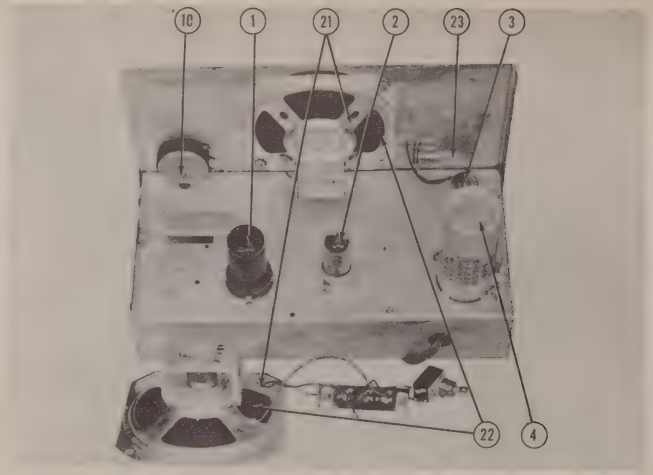
TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: FEDERAL PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
20	2000Ω	2.9Ω	180Ω	.6Ω		A-3876	T22S45		

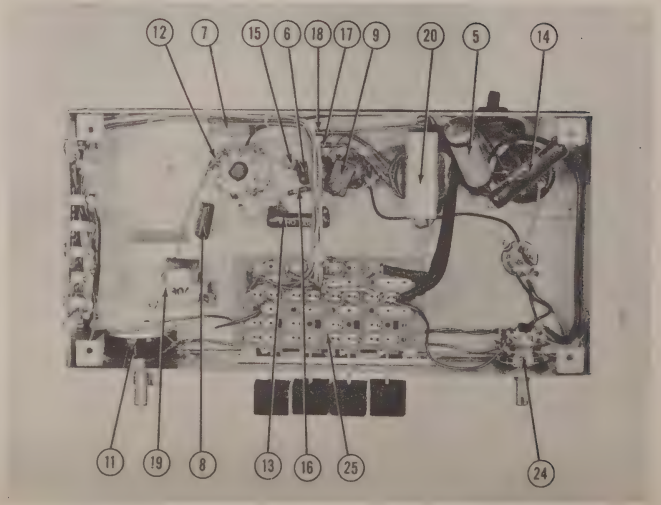
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: FEDERAL PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-113		
21	PM	2.9Ω	42PL2	Mod. P4-X		
	CONE DIA.	VC DIA.				
22	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

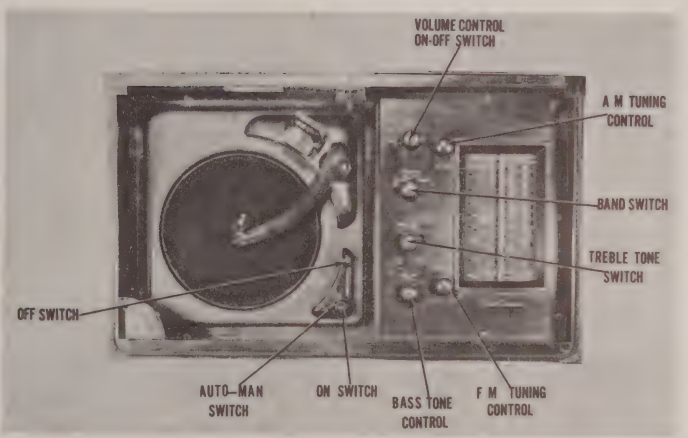
CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW



FREED-EISEMANN
MODEL 46



FREED-EISEMANN PAGE 1
MODEL 46

FREED-EISEMANN,MODEL NO. 46

TRADE NAME	Freed-Eisemann Model No. 46
MANUFACTURER	Freed Radio Corp., 200 Hudson Street, New York, N.Y.
TYPE SET	AC Operated Multiband Superheterodyne Receiver for AM & FM Operation with Automatic Phonograph.
TUBES (TWENTY)	Types, 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SL7GT Det.-AVC-AF, 6J5GT Bass Amp., 6J5GT AF Amp.-Phase Inv., (2) 6Y6GT Power Output, 5U4G Rectifier, 6AG5 RF Amp., 6AG5 1st Converter, 6AG5 HF Osc., 6SA7 SW Osc.-2nd Converter, 6SG7 1st IF Amp., 6SG7 2nd IF Amp., 6SH7 1st Limiter, 6SH7 2nd Limiter, 6H6 Discriminator, 6J5GT Noise Suppressor, 6U5 Tuning Indicator.
POWER SUPPLY	105-125 Volts AC
RATING	1.3 Amp. @ 117 Volts AC
FREQUENCY RANGES	STANDARD BROADCAST 540 - 1600KC SHORT WAVE (BAND #1) 12 - 17.5MC SHORT WAVE (BAND #2) 6.2 - 9.9 MC FREQUENCY MODULATION 88 - 108 MC

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: FREED EISEMANN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SL7GT	6SL7GT	8BD	
5	Bass Amp.	6J5GT	6J5GT	6Q	
6	AF Amp-Phase Inv.	6J5GT	6J5GT	6Q	
7	Power Output	6Y6G	6Y6G	7AC	
8	Power Output	6Y6G	6Y6G	7AC	
9	Rectifier	5U4G	5U4G	5T	
10	RF Amp.	6AG5	6AG5	7BD	
11	1st Converter	6AG5	6AG5	7BD	
12	HF Osc.	6AG5	6AG5	7BD	
13	6.4 MC Osc.-2nd Converter	6SA7	6SA7	8R	
14	1st IF Amp.	6SG7	6SG7	8BK	
15	2nd IF Amp.	6SG7	6SG7	8BK	
16	1st Limiter	6SH7	6SH7	8BK	
17	2nd Limiter	6SH7	6SH7	8BK	
18	Discriminator	6H6	6H6	7Q	
19	Noise Suppressor	6J5GT	6J5GT	6Q	
20	Tuning Indicator	6U5	6U5	6R	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FREED EISEMANN PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
21	8	450	CE-A2	M-8-450	UT-8	PRS450-8	BR845	TC-71	Filter
22A	40	450		DY-2X40-450	EL-240	AF4444J*	UP8BJ39	FP238	■ Filter
B	40	450							▲ "
23	8	450		M-8-450	UT-8	PRS450-8	BR845	TC-71	Filter
24	8	450		M-8-450	UT-8	PRS450-8	BR845	TC-71	"
25	25	50		M-25-50	TA-525	PRS50-25	BR255	TC-36	Output Cath. Bypass
26	25	50		M-25-50	TA-525	PRS50-25	BR255	TC-36	Audio Cath. Bypass
27	8	450		M-8-450	UT-8	PRS450-8	BR845	TC-71	Filter
28	25	50		M-25-50	TA-525	PRS50-25	BR255	TC-36	1st Audio Cath. Bypass
29	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	Line Filter
30	.5	200		XDMR6-.5	BR-50	430-.5	DYR6050	Cb404	Speaker Crossover
31	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	Audio Coupling
32	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	" "
33	.005	400		S-6-005	TC-25	484-005	DT6D5	TP408	Tone Compensation
34	.5	200		XDMR6-.5	BR-50	430-.5	DYR6050	Cb404	" "
35	.005	600		S-6-005	TC-25	684-005	DT6D5	TP408	" "
36	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	Bass Cont. Coupling
37	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	Screen Bypass
38	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	AM Conv. Screen Bypass
39	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	AM IF Plate Decoup.
40	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	AM IF Cath. Bypass
41	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	AVC Filter
42	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	" "
43	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	AM IF Plate Decoup.
44	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	AVC Filter
45	.01	400		S-4-01	TC-11	484-01	DT4S1	TP421	AM RF Plate Bypass SW
46	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	" " " " BC
47	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	AM RF Cath. Bypass
48	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	AVC Filter
49	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	" "
50	.01	600		S-6-01	TC-11	684-01	DT6S1	TP421	Squelch Input Filter
51	2000	500		MW.5-22	1FM-22	1467-002	1W5D2	MC457	Output Plate Bypass
52	2000	500		MW.5-22	1FM-22	1467-002	1W5D2	MC457	" "
53	62	500							Tone Compensation Cer
54	100	500		MOS.5-31	MS-31	1469-0001	5R5T1	MCb235	AVC Filter
55	62	500							Osc.Grid Capacitor Cer.
56	1000	500		MO.3-21	1FM-21	1468-001	1W5D1	MC455	Fixed Padder
57	24	500							Fixed Trimmer Cer.
58	1000	500		MO.3-21	1FM-21	1468-001	1W5D1	MC455	De-emphasis
59	100	500		MOS.5-31	MS-31	1469-0001	5R5T1	MCb235	Disc. Bypass

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FREED-EISEMANN PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
60	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	2nd Lim. Plate Decoup.
61	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	2nd Conv Fil. Bypass
62	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	2nd Lim. Screen Bypass
63	51	500							Limiter Coupling Cer.
64	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	1st Lim. Plate Decoup.
65	51	500							Lim. Grid Capacitor
66	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	2nd IF Plate Decoup.
67	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	2nd IF Screen Bypass
68	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	2nd IF Cath. Bypass
69	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	2nd IF Grid Capacitor
70	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	1st IF Plate Decoup.
71	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	1st IF Screen Bypass
72	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	RF Bypass Pwr. Supp.
73	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	1st IF Cath. Bypass
74	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	1st IF Grid Capacitor
75	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	2nd Conv Plate Decoup.
76	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	2nd Con. Screen Bypass
77	51	500							FM Osc. Grid Capacitor
78	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	1st Conv. Plate Decoup.
79	1000	500		MO.3-21	1FM-21	1468-001	1W5D1	MC455	1st Con. Screen Bypass
80	1000	500		MO.3-21	1FM-21	1468-001	1W5D1	MC455	1st Con. Cath Bypass
81	1000	500		MO.3-21	1FM-21	1468-001	1W5D1	MC455	" " " "
82	1000	500		MO.3-21	1FM-21	1468-001	1W5D1	MC455	FM Osc. Plate Bypass
83	24	500							FM Osc. Grid Capacitor
84	51	500							RF Coupling Cer.
85	510	500		MO.5-35	1FM-35	1468-0005	5W5T5	MC245	FM RF Cath. Bypass
86	510	500		MO.5-35	1FM-35	1468-0005	5W5T5	MC245	" " " "
87	1000	500		MO.3-21	1FM-21	1468-001	1W5D1	MC455	FM RF Screen Bypass
88	1000	500		MO.3-21	1FM-21	1468-001	1W5D1	MC455	RF Decoupling
89	150	500		MO.5-315	1FM-315	1468-00015	5W5T15	MC236	FM RF Fil. Bypass
90	150	500		MO.5-315	1FM-315	1468-00015	5W5T15	MC236	1st Conv Fil. Bypass
91	150	500		MO.5-315	1FM-315	1468-00015	5W5T15	MC236	FM Osc Fil. Bypass
92	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	1st IF Fil. Bypass
93	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	2nd IF Fil. Bypass
94	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	1st Lim. Fil. Bypass
95	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	2nd Lim. Fil. Bypass
96	24	500							Ant. Coupling

* Parallel 2-20 MFD. sections to obtain 40 MFD.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FREED EISEMANN PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
97A	500KΩ	1	RVC-A1	TM231	D19-133X	T-90	Volume Control.
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 97A per instructions
C	Switch		"	M26	41	SW-A	" " " "
98A	1OKΩ	1	RVC-A2	MR20	D11-116	M-27-S	Bass Control.
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 98A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FREED-EISEMANN PART No.	IRC PART No.	IDENTIFICATION CODES
99	200Ω	½		BW-½-220	Red-Blk.-Br. FM-RF Cathode
100	68KΩ	½		BTS-68K	Blue-Gray-Or. FM-RF Screen Dropping
101	10KΩ	½		BTS-10K	Br.-Blk.-Or. FM-RF Plate Load
102	1000Ω	½		BTS-1000	Br.-Blk.-Red FM 1st Converter Cathode
103	270KΩ	½		BTS-270K	Red-Vi.-Yl. FM 1st Converter Screen Dropping
104	1000Ω	½		BTS-1000	Br.-Blk.-Red FM 1st Converter Plate Decoupling
105	30KΩ	½		BTS-33K	Or.-Blk.-Or. FM 1st Oscillator Plate Dropping
106	39KΩ	½		BTS-39K	Or.-White-Or. FM 1st Oscillator Grid
107	22KΩ	½		BTS-22K	Red-Red-Or. FM 2nd Oscillator Grid
108	51KΩ	½		BTS-47K	Grn.-Br.-Or. 10.7 MC IF Transformer Pri. Shunt

ALIGNMENT INSTRUCTIONS

For dial pointer adjustment, rotate both variables to the fully closed position and set dial pointers to index mark at low ends of the dial scales. If adjustment is needed, make sure to cement the pointer carriage to the dial cord. Before attempting to align set allow it and signal generator to warm up for at least 30 minutes.

In alignment of discriminator connect a zero center microammeter with 500KΩ resistor in series with it across resistor #131 in the discriminator load for Step 4 and across the entire discriminator load (from Pin 4 of 6H6 discriminator tube to ground) for Step 5.

In AM alignment volume control should be at maximum, bass control at minimum, and output of signal generator no higher than is necessary to obtain output signal. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin 4 of 6SG7 2nd IF Tube #15. Low side to ground lug of same tube socket.	4.3MC unmodulated	FM	FM variable fully open	VTVM across 1st limiter filter resistor #123	A1,A2.	Remove noise suppressor 6J5 tube #19. Adjust for maximum output
.1 MFD.	High side to pin 4 of 6SG7 1st IF Tube #14 and low side to ground lug of same tube socket.	"	"	"	"	A3,A4.	Adjust for maximum output. Do not repeak any of the above adjustments.
.1 MFD.	High side to pin #8 of 6SA7 2nd Converter Tube #13 and low side to ground lug of same tube socket.	"	"	"	"	A5,A6.	Adjust for maximum output. Do not repeak any of the above adjustments.
.1 MFD.	"	"	"	"	Across resistor #131 (See prealignment instructions	A7	"
.1 MFD.	"	"	"	"	Pin 4 of 6H6 (#18) to ground. (See prealignment instructions)	A8	Adjust for zero output. Swing signal generator 75KC above and 75KC below IF frequency and record both readings. If not equal, repeat last two steps and check again. It may be necessary to adjust A8 slightly to get these readings equal. This adjustment is very critical as misadjustment will cause distortion of FM reception.
.1 MFD.	"	Unmodulated 10.7MC	"	"	VTVM across 1st limiter filter resistor #123. Microammeter same as in last step	A9	Adjust for maximum output on VTVM.
.1 MFD.	"	"	"	"	"	A10,A11	Adjust for maximum output on VTVM making certain that peaking occurs when the microammeter, connected from pin 4 of 6H6 disc tube #18 to ground, reads zero. If it does not, repeat last two steps.
150Ω	High side to FM ant. post and low side to chassis.	Unmodulated 92MC	"	92MC	"	A12	Adjust for maximum output on VTVM and zero on the microammeter. If the latter does not read zero rock tuning gang slightly and adjust A12.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
150Ω	"	106MC	"	106MC	"	A13	Adjust for maximum output on VTVM and zero on microammeter, rocking the tuning gang if latter does not read zero. Repeat last two steps.
150Ω	"	"	"	"	"	A14	Adjust for maximum output on the VTVM and zero on the microammeter.
150Ω	"	"	"	"	"	A15	Adjust for maximum output on the VTVM and zero on the microammeter. Replace noise suppressor tube 6J5 #19.
.1 MFD.	High side to pin #4 (grid) of 6SK7 IF Tube #3 and low side to ground lug of same tube socket.	455KC modulated	BC	Tuning cap fully open.	Across voice coil	A16,A17	Adjust for maximum output.
.1 MFD.	High side to stator of center section of AM variable and low side to chassis.	"	"	"	"	A18,A19	Adjust for maximum output. Do not repeak any of the above adjustments.
200MMFD	High side to AM ant. binding post.	1000KC modulated	BC. Ant. switch to outside ant.	1000KC	"	A20	Adjust for maximum output.
200MMFD	"	600KC modulated	"	600KC	"	A21	" " " "
200MMFD	"	"	"	"	"	A22,A23	" " " "
200MMFD	"	1500KC modulated	"	1500KC	"	A24	" " " "
200MMFD	"	"	"	"	"	A25,A26	Adjust for maximum output. If receiver was badly out of alignment recheck the last 5 steps.
	Disconnect		BC. Ant. switch to loop	BC station near 1400KC		A27	Adjust for maximum output.
400 Ω	High side to AM ant. binding post. Low side to ground.	9.9MC modulated	SW Band 2. Ant. Switch to outside ant.	9.9MC	"	A28	" " " "
400 Ω	"	"	"	"	"	A29,A30	Rock variable and adjust for maximum output.
400 Ω	"	17.5MC modulated	SW Band 1. Ant. Switch to outside ant.	17.5MC	"	A31	Adjust for maximum output.
400 Ω	"	"	"	"	"	A32,A33	Rock variable and adjust for maximum output.
200 MMF.	High side to AM Ant. binding post. Low side to chassis.	455KC strong signal modulated	BC	1000KC	"	A34	Adjust for minimum output.

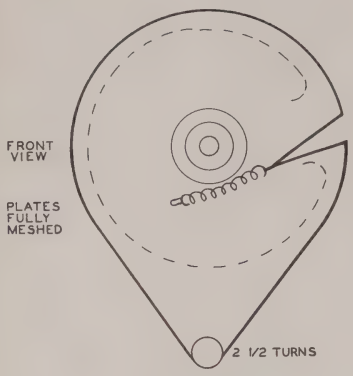


FIG. 1 DIAL DRIVE (AM)

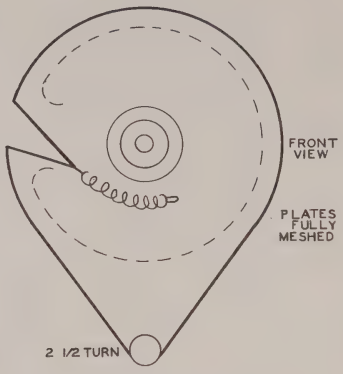


FIG. 2 DIAL DRIVE (F.M.)

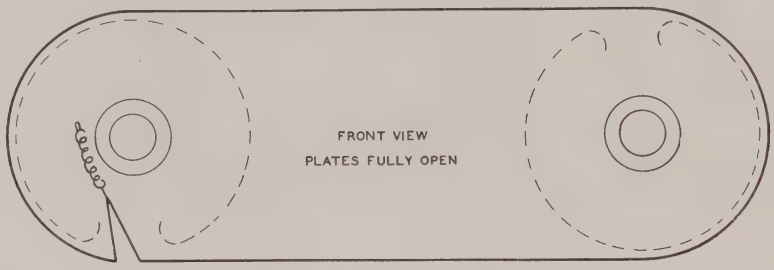


FIG. 3 DIAL DRUMS
A.M. TUNING

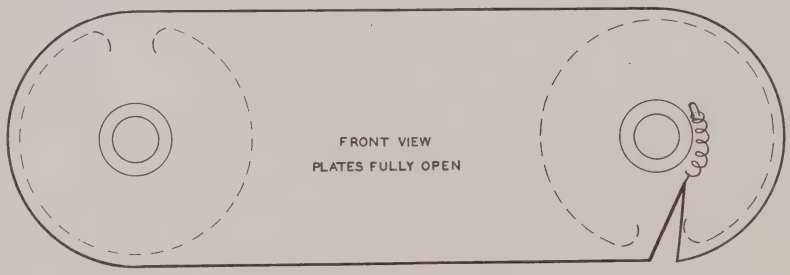
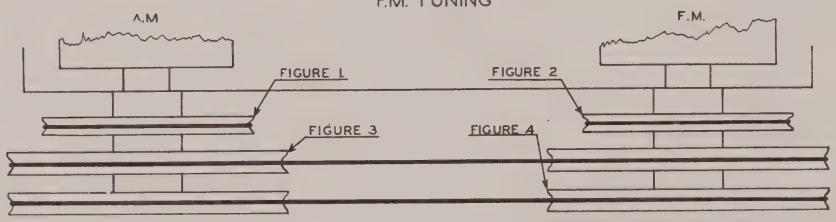


FIG. 4 DIAL DRUMS
F.M. TUNING



DIAL CORD DRIVES

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	FREED-EISEMANN PART No.	IRC PART No.	
109	51KΩ	½		BTS-47K	Grn.-Br.-Or. 10.7 MC IF Transformer Sec. Shunt
110	15KΩ	2		BT-2-15K	Br.-Grn.-Or. FM 2nd Converter Screen Dropping
111	3600Ω	½		BTS-3300	Or.-Blue-Red FM 2nd Converter Plate Dropping
112	100KΩ	½		BTS-100K	Br.-Blk.-Yl. FM 1st IF Grid
113	50KΩ	½		BTS-47K	Grn.-Blk.-Or. 4.3MC IF Transformer Sec. Shunt ★
114	200Ω	½		BW-½-220	Red-Blk.-Br. FM 1st IF Cathode
115	39KΩ	½		BTS-39K	Or.-White-Or. FM 1st IF Screen Dropping
116	3600Ω	½		BTS-3300	Or.-Blue-Red FM 1st IF Plate Dropping
117	51KΩ	½		BTS-47K	Grn.-Br.-Or. 2nd 4.3MC IF Transformer Pri. Shunt
118	100KΩ	½		BTS-100K	Br.-Blk.-Yl. FM 2nd IF Grid
119	50KΩ	½		BTS-47K	Grn.-Blk.-Or. 2nd 4.3MC IF Transformer Sec. Shunt ★
120	390Ω	½		BW-½-390	Or.-White-Br. FM 2nd IF Cathode
121	39KΩ	½		BTS-39K	Or.-White-Or. FM 2nd IF Screen Dropping
122	3600Ω	½		BTS-3300	Or.-Blue-Red FM 2nd IF Plate Dropping
123	51KΩ	½		BTS-47K	Grn.-Br.-Or. FM 1st Limiter Grid
124	100KΩ	½		BTS-100K	Br.-Blk.-Yl. FM 1st Limiter Plate Load
125	24KΩ	½		BTS-22K	Red-Yl.-Or. FM 2nd Limiter Grid
126	22KΩ	½		BTS-22K	Red-Red-Or. Bleeder
127	39KΩ	1		BTA-39K	Or.-White-Or. Screen Dropping
128	100KΩ	½		BTS-100K	Br.-Blk.-Yl. FM 2nd Limiter Plate Dropping
129	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Discriminator Diode Load
130	75KΩ	½		BTS-82K	Vi.-Grn.-Or. Discriminator Network
131	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Discriminator Diode Load
132	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Series Tuning Eye
133	510KΩ	½		BTS-470K	Grn.-Br.-Yl. Audio Voltage Divider ★
134	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. " " "
135	220KΩ	½		BTS-220K	Red-Red-Yl. Noise Limiter Grid - See Note 1
136	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AVC Network
137	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AVC Network
138	390Ω	½		BW-½-390	Or.-White-Br. AM-RF Cathode
139	3600Ω	½		BTS-3300	Or.-Blue-Red AM-RF Plate Dropping †
140	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AVC Network
141	22KΩ	½		BTS-22K	Red-Red-Or. AM Oscillator Grid
142	3600Ω	½		BTS-3300	Or.-Blue-Red AM Oscillator Plate Dropping
143	510Ω	½		BTS-470	Grn.-Br.-Br. 1st AM-SW Oscillator Coil Shunt
144	200Ω	½		BW-½-220	Red-Blk.-Br. 2nd " " " "
145	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AVC Network
146	1000Ω	½		BTS-1000	Br.-Blk.-Red Parasitic Suppressor
147	1000Ω	½		BTS-1000	Br.-Blk.-Red AM-IF Cathode
148	3600Ω	½		BTS-3300	Or.-Blue-Red AM-IF Screen Dropping
149	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
150	10KΩ	10		ABA-10,000	Voltage Divider-See Note 3
151	270KΩ	½		BTS-270K	Red-Vi.-Yl. Diode Load
152	51KΩ	½		BTS-47K	Grn.-Br.-Or. " "
153	20Ω	½		BW-½-22	Red-Blk.-Blk. 1st AF Cathode
154	3600Ω	½		BTS-3300	Or.-Blue-Red 1st AF Cathode
155	1500Ω	½		BTS-1500	Br.-Grn.-Red Feedback
156	220KΩ	½		BTS-220K	Red-Red-Yl. Bass Amplifier Grid
157	5100Ω	½		BTS-4700	Grn.-Br.-Red Bass Amplifier Cathode
158	51KΩ	½		BTS-47K	Grn.-Br.-Or. Tone Compensation
159	68KΩ	½		BTS-68K	Blue-Gray-Or. " "
160	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Phono Shunt
161	10KΩ	½		BTS-10K	Br.-Blk.-Or. Bass Amplifier Plate Dropping
162	5100Ω	½		BTS-4700	Grn.-Br.-Red Phase Inverter Cathode
163	220KΩ	½		BTS-220K	Red-Red-Yl. 1st AF Plate Load
164	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Phase Inverter Plate Load
165	22KΩ	½		BTS-22K	Red-Red-Or. Voltage Dropping
166	220KΩ	½		BTS-220K	Red-Red-Yl. Output Grid
167	220KΩ	½		BTS-220K	Red-Red-Yl. " "
168	18KΩ	½		BTS-18K	Br.-Gray-Or. Phase Inverter Grid
169	2400Ω	1		BTA-2200	Red-Yl.-Red Tone Compensation
170	2400Ω	1		BTA-2200	Red-Yl.-Red " "
171	130Ω	10		ABA-150	Bias - See Note 2
172A	9KΩ	10		AB-9000	Voltage Divider
B	3KΩ	10		AB-3000	" "
C	110Ω	10		AB-100	" "
173	6Ω				Series Pilot Light ★
214	240KΩ	½		BTS-220K	Red-Yl.-Yl. 6J5 NL Plate Load

Note 1 - Some models use a 1 Meg. resistor in this application.
Note 2 - Set slider at 130Ω from one end. ★ - Not used in all models.
Note 3 - Set slider at center. † - Some models use a 5100Ω resistor in this application.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	FREED EISEMANN PART No.	STANCOR PART No.	THORDARSON PART No.	INSTALLATION NOTES
174	117V AC @ 1.3A	640V CT @ 160A	5V AC @ 2.8A	6.4V AC @ 7.8A	TP-C2		T-22R07‡	‡Use universal mounting brackets.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		FREED EISEMANN PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
175	2800Ω CT	2.5Ω	400Ω CT	.5Ω	Part of QSD-A3	A-3830	T22S60 * *		* Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			FREED-EISEMANN PART No.	JENSEN PART No.		
	FIELD RES.	VC IMP.				
176A	250Ω	2.7Ω	QSD-A3			
	CONE DIA.	VC DIA.				
B	11-1/2"	1-1/4"	Cone has special adjustment feature-Order from manufacturer.			
C			QSD-A2			Alternate Speaker
	FIELD	VC IMP.		ST-107		
177A	FM	3.4Ω	QSD-A4	Mod. P6-V		
	CONE DIA.	VC DIA.				
B	4-1/2"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	FREED-EISEMANN PART No.	MEISSNER PART No.	
178	Loop	1.5Ω		LC-B1		
179	Ant. RF Choke	13Ω				
180	BC Ant. Coil	38Ω	5Ω	TR-A1		
181A	SW Ant. Coil B2	0Ω	.5Ω	TR-A4		
181B	" " " B1	0Ω	0Ω	" "		
182	FM Ant. Coil	0Ω				
183	BC RF Coil	3.5Ω	4.5Ω	TR-A2		
184A	SW RF Coil B2	0Ω	.5Ω	TR-A5		
184B	" " " B1	0Ω	0Ω	" "		
185	FM RF Coil		0Ω			
186	BC Osc. Coil	3.5Ω	1Ω	TR-A3		
187A	SW Osc. Coil B2	0Ω	.5Ω	TR-A6		
187B	" " " B1	0Ω	0Ω	" "		
188	FM 1st Osc.		0Ω			
189	FM 10.7MC IF	0Ω	0Ω	TI-B4		
190	FM 2nd Osc.	"	.5Ω	TR-A7		
191	Input IF AM	11.5Ω	16.5Ω	TI-B9	16-5740	
192	Output IF AM	"	"	TI-B9	16-5742	
193	1st IF 4.3MC	3.5Ω	3.5Ω	TI-A1		
194	2nd IF 4.3 MC	3.5Ω	3.5Ω	TI-A2		
195	1st Limiter 4.3 MC IF	3.5Ω	3.5Ω	TI-A3		
196	1st Limiter RF Plate Choke	13.5Ω		LC-A2		
197	Discriminator 4.3MC IF	2.5Ω	2.5Ω	TI-B8		
198	RF Coil RFC1	.5Ω				

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					FREED-EISEMANN PART No.		
199-208 Inc.	Bayonet	6-8	0.25	Blue			Type 44

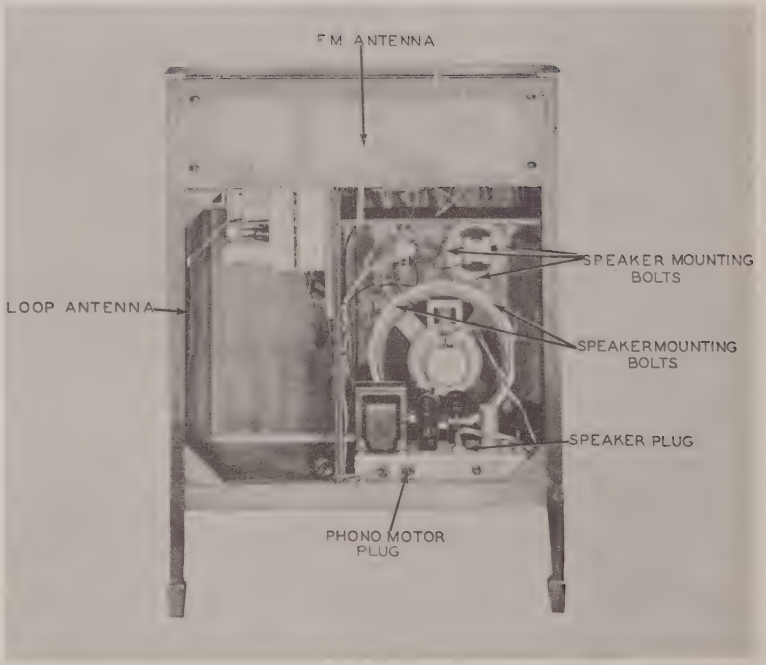
PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

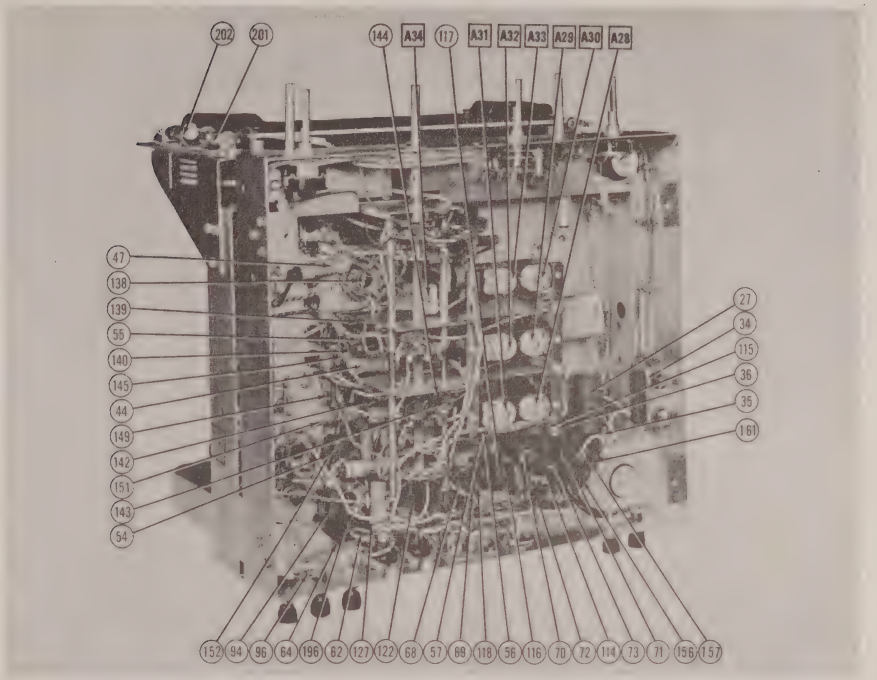
ITEM No.	PART NAME	FREED-EISEMANN PART No.	NOTES
208	Switch	SR-161	Wave Band
210	Switch	SR-A2	Treble Control
211	Switch	SR-A3	Ant. Loop

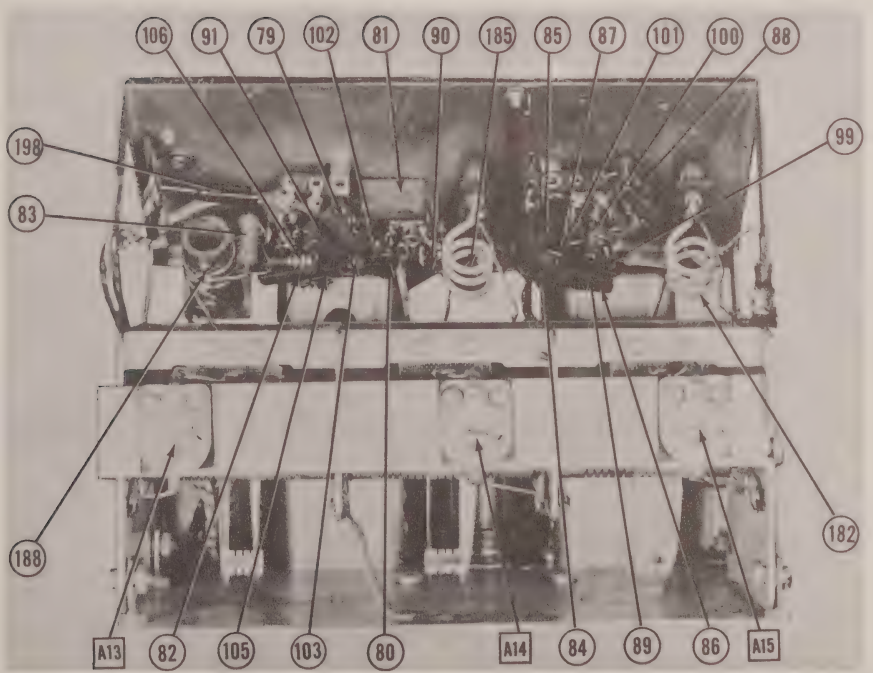
DISASSEMBLY INSTRUCTIONS

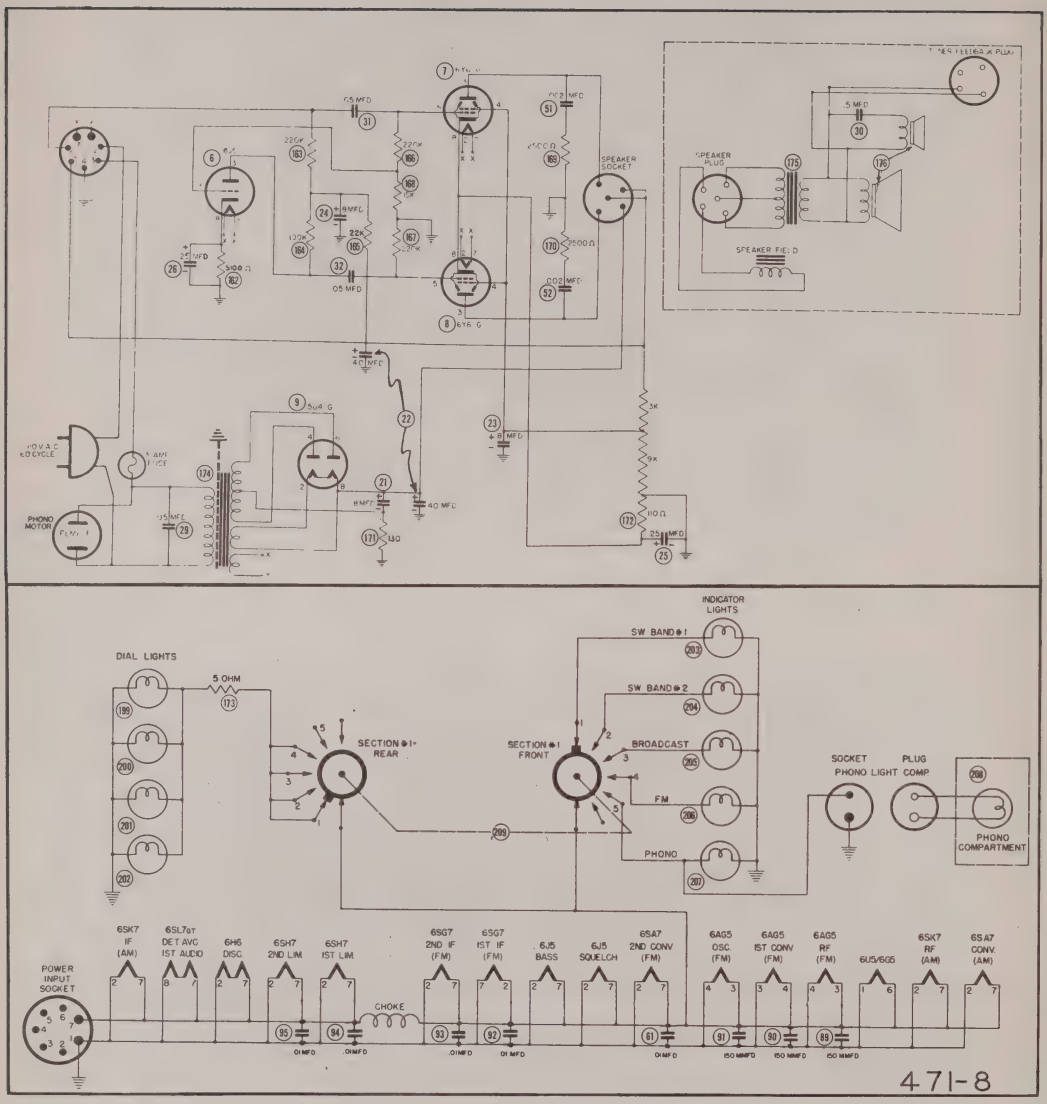
1. Remove the six push-on type control knobs.
2. Disconnect AC line cord from power supply.
3. Disconnect AC phono-motor plug to power supply.
4. Remove the set screw from speaker plug and remove plug from socket on power supply.
5. Disconnect power supply cable from power supply and receiver chassis.
6. Disconnect plug from high frequency speaker assembly bracket.
7. Disconnect speaker plug from receiver chassis.
8. Disconnect the phono-cabinet light plug from chassis.
9. Disconnect the phono-pickup plug from receiver chassis.
10. Disconnect the FM antenna leads from the receiver chassis.
11. Disconnect loop antenna plug from receiver chassis.
12. Remove four machine bolts and lock washers from power supply. Remove power supply.
13. Remove twelve hex head self tapping screws from cover plate of power supply. Remove plate.
14. Remove three machine screws from chassis board.
15. Remove five wood screws from dial cabinet board.
16. Remove two wood screws from cabinet lid support. (Lay lid back.)
17. Lift dial board and chassis through top of cabinet.
18. Remove four machine screws and washers holding chassis to chassis board. Remove chassis.
19. Remove four hex nuts and lock washers from large speaker posts. Remove speaker.
20. Remove four hex nuts and lock washers from high frequency speaker posts.
21. Remove three Phillips head screws from high frequency speaker bracket assembly. Remove speaker and assembly.
22. Remove two Phillips head screws from loop antenna. Remove loop antenna.



CHASSIS—BOTTOM VIEW






SPEAKER PLUG
SPEAKER FIELD
SPEAKER SOCKET
.05 MFD
.02 MFD
.8 MFD
22K
220K
270K
100K
100Ω
2500Ω
3K
9K
110Ω
40 MFD
.25 MFD
6V6 G
5U4 G
PHONO MOTOR
INDICATOR LIGHTS
SW BAND #1
SW BAND #2
BROADCAST
FM
PHONO
DIAL LIGHTS
5 OHM
SECTION #1 REAR
SECTION #1 FRONT
SOCKET PHONO LIGHT
PLUG COMP
PHONO COMPARTMENT
POWER INPUT SOCKET
6SK7 IF (AM)
6SL7GT DET AVC 1ST AUDIO
6H6 DISC
6SH7 2ND LIM
6SH7 1ST LIM
6SG7 2ND IF (FM)
6SG7 1ST IF (FM)
6J5 BASS
6J5 SQUELCH
6SA7 2ND CONV (FM)
6AG5 OSC (FM)
6AG5 1ST CONV (FM)
6AG5 RF (FM)
6U5/6G5
6SK7 RF (AM)
6SA7 CONV. (AM)
CHOKE
.01 MFD
150 MMFD

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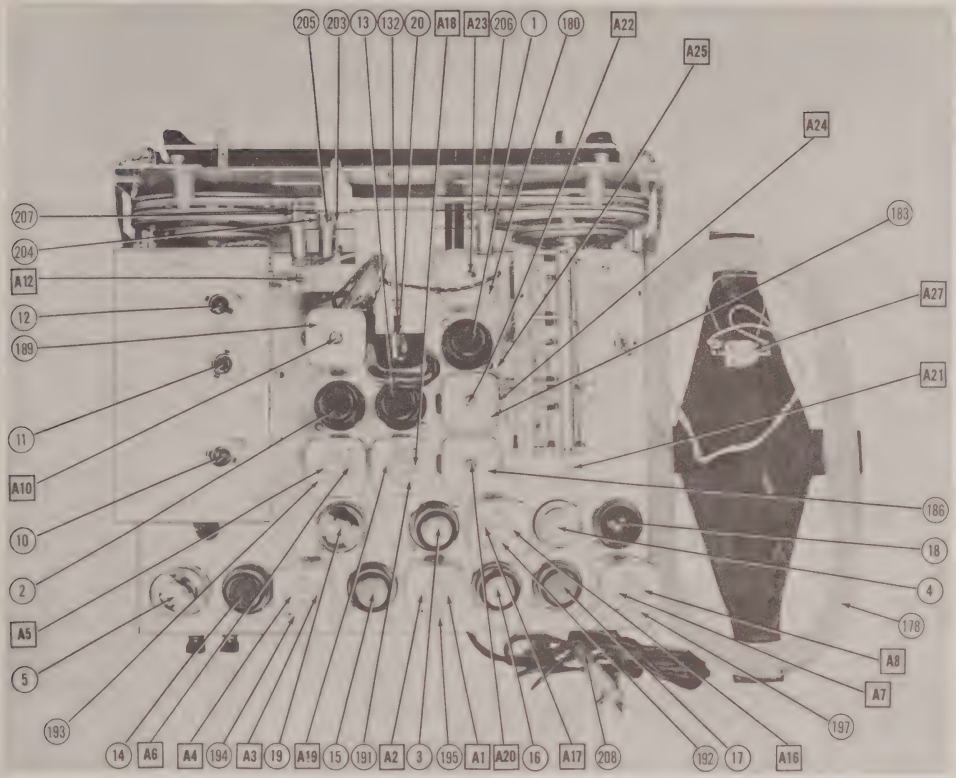
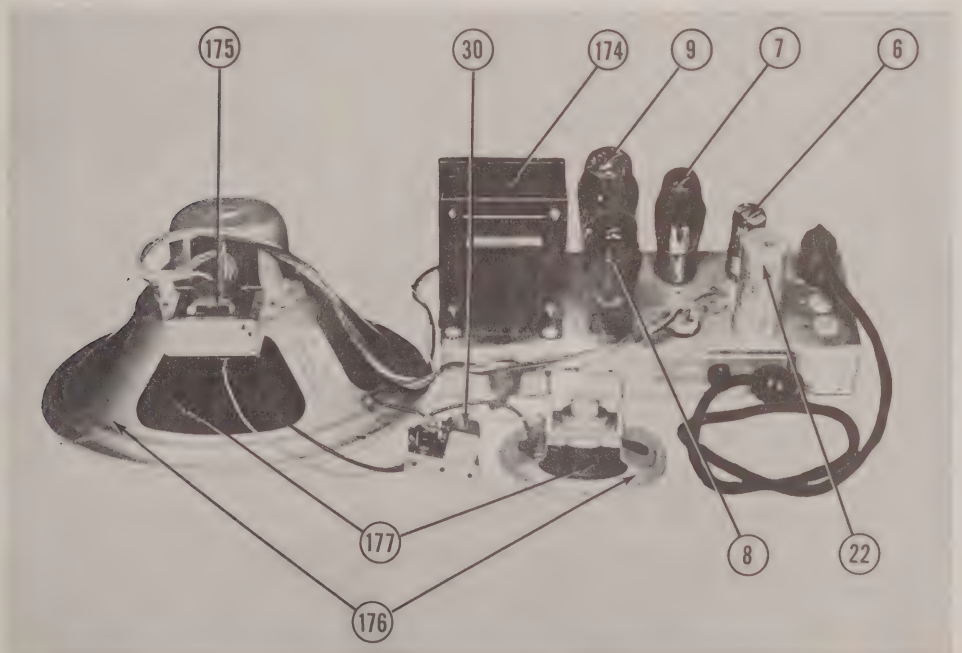
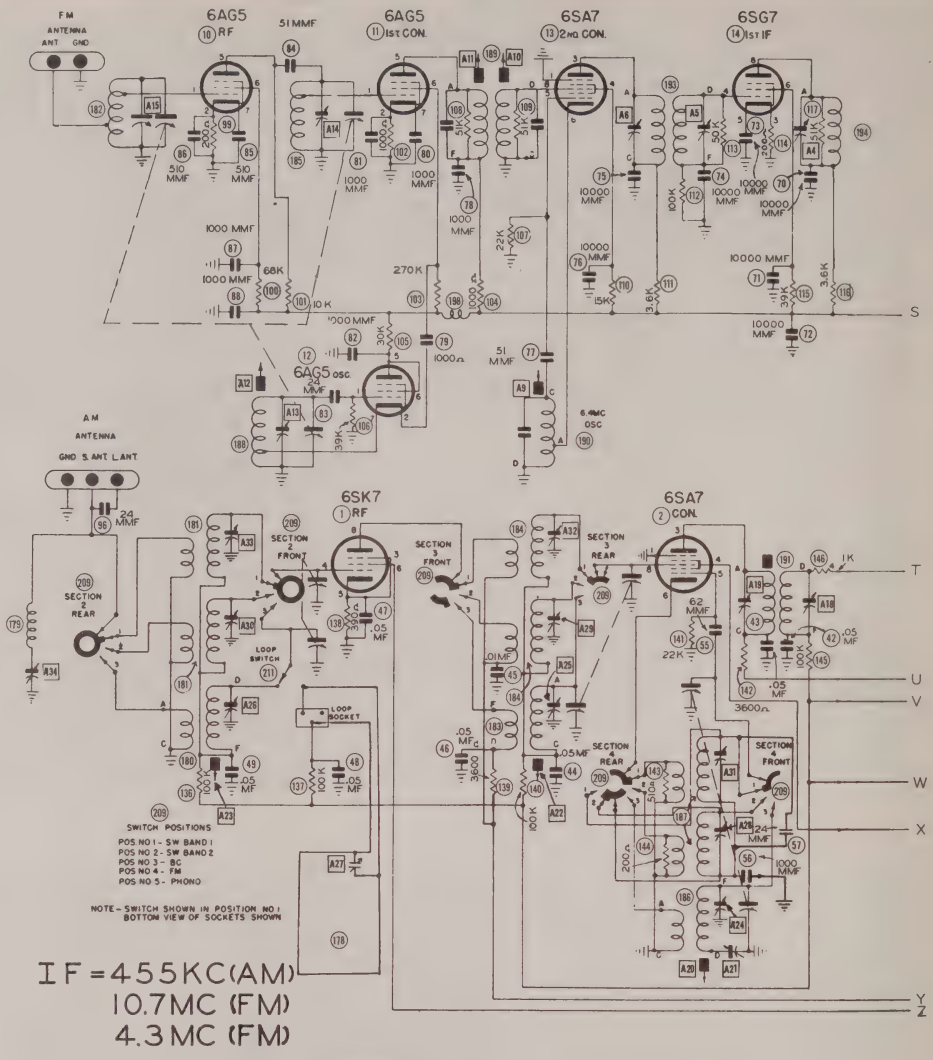
CHASSIS—TOP VIEW







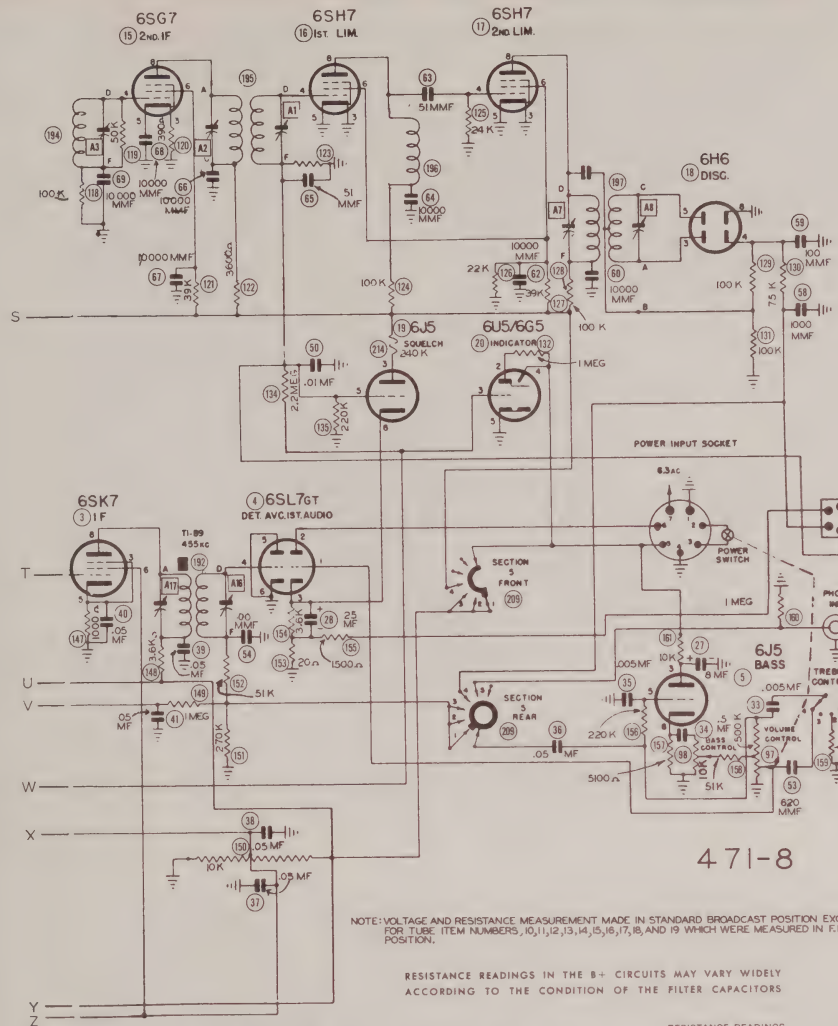
IF = 455KC (AM)
10.7MC (FM)
4.3MC (FM)

STAGE GAIN MEASUREMENTS

ANT. to RF GRID	8X	600KC
RF GRID to CONV GRID	10X	600KC
CONVERSION GAIN	40X	600KC to 455KC
1st IF TRANS	1X	455KC
IF TUBE	170X	455KC
2nd IF TRANS	1X	455KC
AUDIO	25X	400 CPS
PHASE INV; (Grid to Plate)	10X	400 CPS
OUTPUT (Grid to Plate)	15X	400 CPS

471-8

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



NOTE: VOLTAGE AND RESISTANCE MEASUREMENT MADE IN STANDARD BROADCAST POSITION EXCEPT FOR TUBE ITEM NUMBERS, 10, 11, 12, 13, 14, 15, 16, 17, 18, AND 19 WHICH WERE MEASURED IN F.M. POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

VOLTAGE READINGS

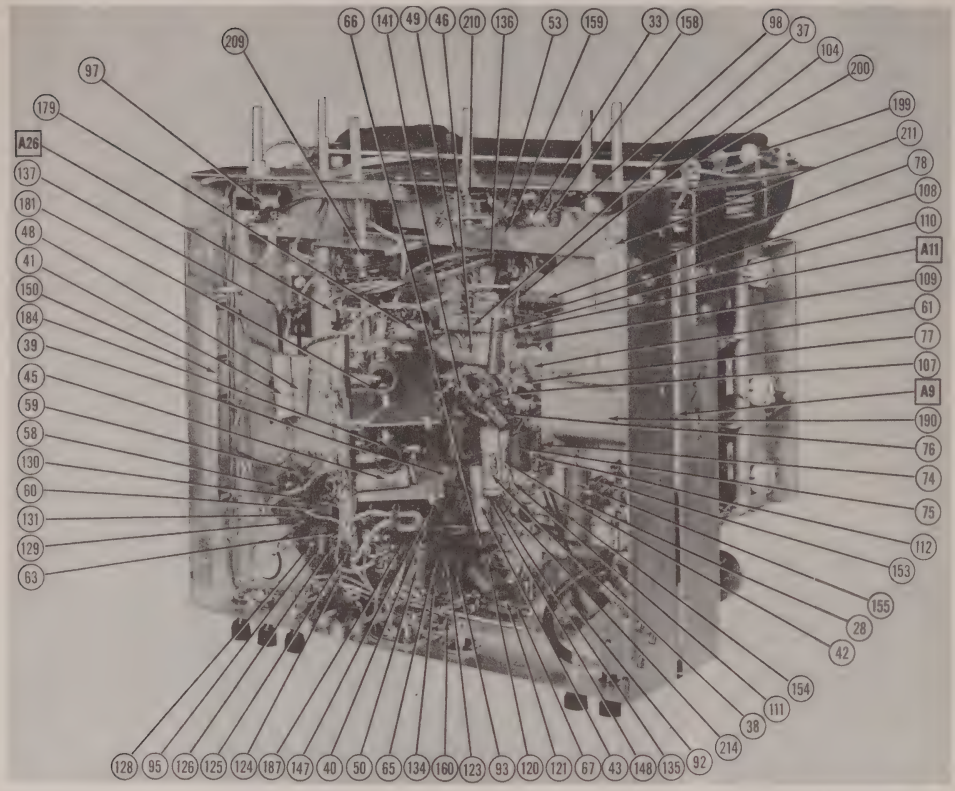
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	2.62V.DC	-4V.DC	2.62V.DC	82V.DC	6.4V.AC	183V.DC
2	6SA7	0V.	0V.	192V.DC	82V.DC	-4V.DC	0V.	6.4V.AC	-45V.DC
3	6SK7	0V.	0V.	3.9V.DC	-4V.DC	3.9V.DC	82V.DC	6.4V.AC	183V.DC
4	6SL7GT	0V.	112V.DC	1.68V.DC	-7 V.DC	0V.	0V.	6.4V.AC	0V.
5	6J5GT	0V.	0V.	182V.DC	199V.DC	0V.	0V.	6.4V.AC	8.67V.DC
6	6J5GT	0V.	0V.	92V.DC	177V.DC	0V.	0V.	6.4V.AC	4.2V.DC
7	6Y6G	0V.	0V.	185V.DC	145V.DC	0V.	0V.	6.4 V.AC	14.9V.DC
8	6Y6G	0V.	0V.	185V.DC	145V.DC	0V.	0V.	6.4V.AC	14.9V.DC
9	5U4G	0V.	255V.DC	0V.	320V.AC	0V.	320V.AC	0V.	255V.DC
10	6AG5	0V.	1.25V.DC	6.4V.AC	0V.	167 V.DC	102V.DC	1.25V.DC	
11	6AG5	0V.	1.8V.DC	0V.	6.4V.AC	193V.DC	87V.DC	1.8V.DC	
12	6AG5	-35V.DC	0V.	6.4V.AC	0V.	92 V.DC	92 V.DC	0V.	
13	6SA7	0V.	0V.	187V.DC	86V.DC	-33V.DC	0V.	6.4V.AC	0V.
14	6SG7	0V.	6.4V.AC	1.8V.DC	0V.	1.8V.DC	113V.DC	0V.	169V.DC
15	6SG7	0V.	0V.	1.82V.DC	0V.	1.82V.DC	124V.DC	6.4V.AC	176V.DC
16	6SH7	0V.	0V.	0V.	-4 V.DC	0V.	101 V.DC	6.4V.AC	100V.DC
17	6SH7	0V.	0V.	0V.	-53V.DC	0V.	101V.DC	6.4V.AC	82V.DC
18	6H6	0V.	0V.	-12.2V.DC	-3 V.DC	-12.2V.DC	-2.6V.DC	6.4V.AC	0V.
19	6J5GT	0V.	0V.	167V.DC	-8 V.DC	-38V.DC	193V.DC	6.4V.AC	6.55V.DC

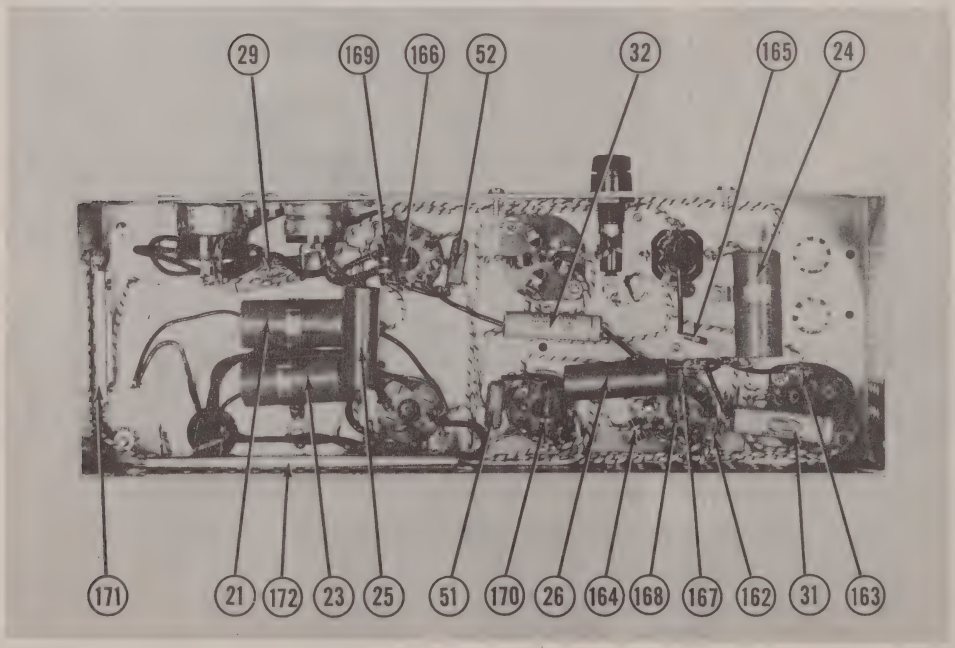
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	380Ω	810KΩ	380Ω	3.3KΩ	.1Ω	8.2KΩ
2	6SA7	0Ω	0Ω	8.2KΩ	3.3KΩ	19.2KΩ	.3Ω	.1Ω	800KΩ
3	6SK7	0Ω	0Ω	910Ω	810KΩ	910Ω	3.3KΩ	.1Ω	8.3KΩ
4	6SL7GT	255KΩ	211KΩ	5KΩ	260KΩ	0Ω	0Ω	.1Ω	0Ω
5	6J5GT	0Ω	0Ω	14.6KΩ	4.9KΩ	460KΩ	258KΩ	.1Ω	4.8KΩ
6	6J5GT	0Ω	0Ω	120KΩ	24KΩ	17.1KΩ	INF.	.1Ω	4.5KΩ
7	6Y6G	0Ω	0Ω	5KΩ	4.7KΩ	225KΩ	2.2KΩ	.1Ω	98Ω
8	6Y6G	0Ω	0Ω	5KΩ	4.7KΩ	195KΩ	2.1 KΩ	.1Ω	98Ω
9	5U4G	INF.	500KΩ	INF.	13.2Ω	INF.	13.2Ω	INF.	5KΩ
10	6AG5	0Ω	190Ω	.1Ω	0Ω	17.5KΩ	76KΩ	190Ω	
11	6AG5	0Ω	920Ω	0Ω	.1Ω	10.5KΩ	270KΩ	920Ω	
12	6AG5	35.5KΩ	0Ω	.1Ω	0Ω	36KΩ	36KΩ	0Ω	
13	6SA7	0Ω	0Ω	12.5KΩ	23KΩ	21.2KΩ	0Ω	.1Ω	.1Ω
14	6SG7	0Ω	.1Ω	190Ω	86KΩ	190Ω	45KΩ	0Ω	12.8KΩ
15	6SG7	0Ω	0Ω	350Ω	96KΩ	350Ω	46KΩ	.1Ω	12.7KΩ
16	6SH7	0Ω	0Ω	0Ω	46KΩ	0Ω	14KΩ	.1Ω	100KΩ
17	6SH7	0Ω	0Ω	0Ω	26KΩ	0Ω	14KΩ	.1Ω	100KΩ
18	6H6	0Ω	0Ω	93KΩ	190KΩ	93KΩ	260KΩ	.1Ω	0Ω
19	6J5GT	0Ω	0Ω	3.5KΩ	730KΩ	780KΩ	9.3KΩ	.1Ω	5KΩ

1 - DC Voltage measurements are at 20,000 ohms per volt. AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

CHASSIS—BOTTOM VIEW





GRANTLINE
MODEL 651

GRANTLINE
MODEL 651

GRANTLINE MODEL 651

TRADE NAME	Grantline, Model 651
SUPPLIER	W. T. Grant Co., 1441 Broadway, N.Y., N.Y.
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE)	Types, 14Q7 Converter, 14A7/12B7, 14B6 Det.-AVC-AF, 50A5 Power Output, 35Y4 Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	540-1700KC RATING .235 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

Use isolation transformer if available. If not, connect capacitor in series with the low side of the signal generator and B-. Set volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.01 MFD.	High side to stator of rear section of variable. Low side to B-.	455KC	Quiet point at high freq. end. of dial.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
100 MMF.	High side to ant. lead. Low side to chassis.	1720KC	High freq. end. (Fully clockwise)	"	A5	" " " "
100 MMF.	High side to ant. lead. Low side to chassis.	1500KC	Tune for maximum output.	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS (Continued)

TUBES

ITEM No.	USE	REPLACEMENT DATA: GRANTLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	14Q7	14Q7	8AL	
2	IF amp.	14A7/12B7	14A7/12B7	8V	
3	Det.-AVC-AF	14B6	14B6	8W	
4	Power Output	50A5	50A5	6AA	
5	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GRANTLINE PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	A-28.019	M-2x40-150	TA-440	PRSA150-40-40	BRD4415	2N511	Filter - Red
B	40	150							" - "
7	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	Line Filter
8	.02	400		S-4-02	TC-12	484-02	DT4S2	TP423	50A5 Plate Bypass
9	.02	400		S-4-02	TC-12	484-02	DT4S2	TP423	Audio Coupling
10	.005	600		S-6-005	TC-25	684-005	DT6D5	TP408	" "
11	.005	600		S-6-005	TC-25	684-005	DT6D5	TP408	AVC Filter
12	.25	200		S-4-25	TC-2	484-.25	DT4P25	TP430	Line Isolation
13	.002	600		S-6-002	TC-22	684-002	DT6D2	TP405	Ant. Coupling
14	250	500		M0.5-325	1FM-325	1468-00025	5W5T25	MC240	Audio Plate Bypass
15	250	500		M0.5-325	1FM-325	1468-00025	5W5T25	MC240	IF Bypass Vol. Cont.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GRANTLINE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
16A	500KΩ	1	A-9.066	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 16A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

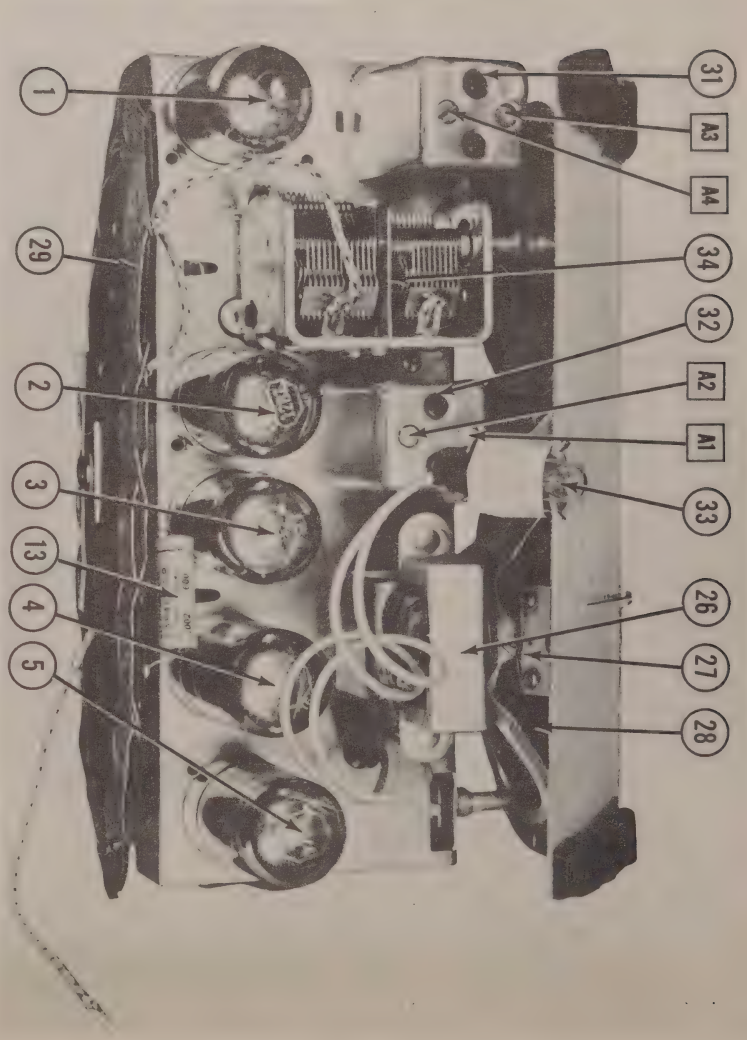
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GRANTLINE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
17	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
18	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AVC Network
19	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn. " "
20	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
21	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. " " Plate Load
22	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
23	150Ω	½		BW-½-150	Br.-Grn.-Br. " Cathode
24	220KΩ	½		BTS-220K	Red-Red-Yl. Line Isolation
25	1000Ω	1		BTA-1000	Br.-Blk.-Red Filter

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: GRANTLINE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.		INSTALLATION NOTES
26	170Ω	3.2Ω	155Ω	.5Ω	Part of B-11.037	A-3876	T-22845		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			GRANTLINE PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-105		
27	PM	3.3Ω	B-11.037	Mod.P5-X		
	CONE DIA.	VC DIA.				
28	4-5/8"	9/16"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

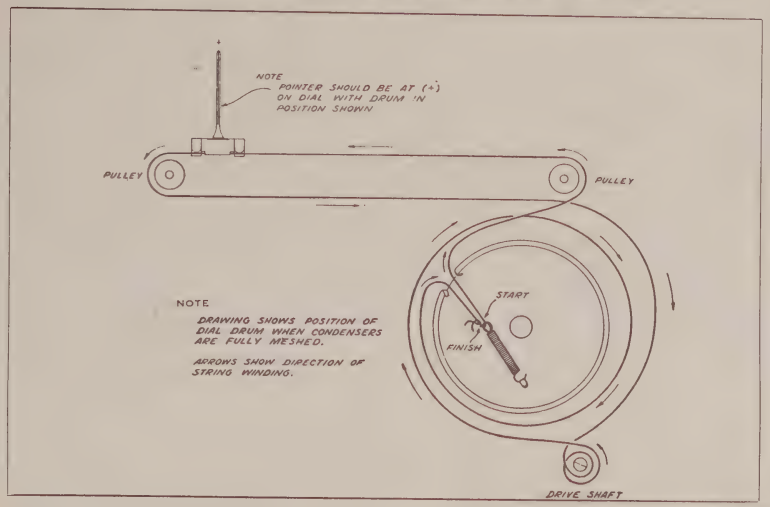
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	GRANTLINE PART No.	MEISSNER PART No.	
29	Loop ant.	0Ω	1.3Ω	B5.008		
30	Osc. Coil	.3Ω	6.2Ω	B2.192	14-1040 *	* Add 50 MMFD Cap. from grid to high side tuning Cap.
31	Input IF	21.5Ω	21Ω	C2.191-1	16-6666	
32	Output IF	14.2Ω	14.5Ω	C2.191-2	16-6667	

DIAL LIGHT

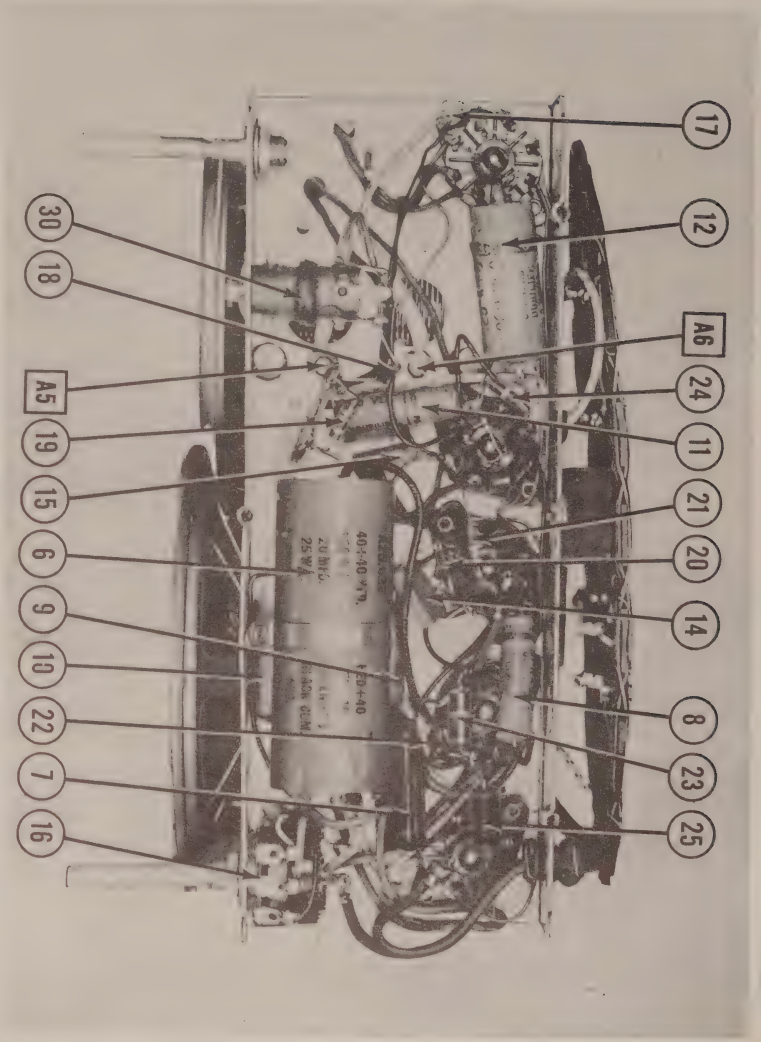
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					GRANTLINE PART No.		
33	Bayonet	6.8	0.15	Brown			Type 47

MISCELLANEOUS

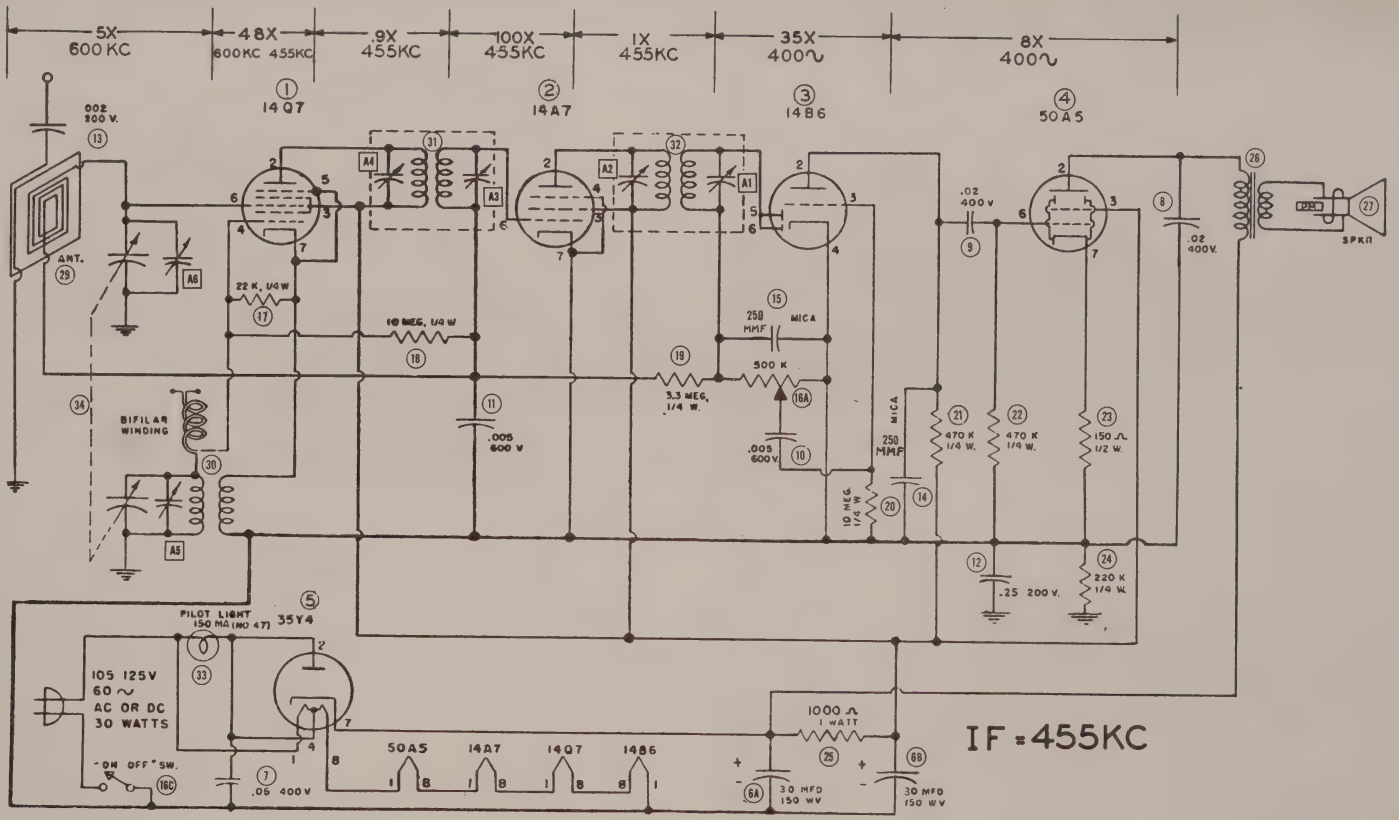
ITEM No.	PART NAME	GRANTLINE PART No.	NOTES
34	Tuning Cap.	C6.032	2 Gang Variable Cap.



CHASSIS—BOTTOM VIEW



GRANTLINE MODEL 651



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	25.5V.AC	93V. DC	93V. DC	-4.8V.DC	0V.	-.15V. DC	0V.	13V.AC
2	14A7	38V.A C	93V. DC	93V. DC	0V.	0V.	-.15V. DC	0V.	25.5V.AC
3	14B6	0V.	60V. DC	-.45V.DC	0V.	-7V.DC	-7V.DC	0V.	13V.AC
4	50A5	87V.AC	107V.DC	93V.DC	0V.	0V.	0V.	5.8V.DC	38V.AC
5	35Y4	117V.AC	113V.AC	0V.	113V.AC	103V.DC	0V.	113V.DC	87V.AC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

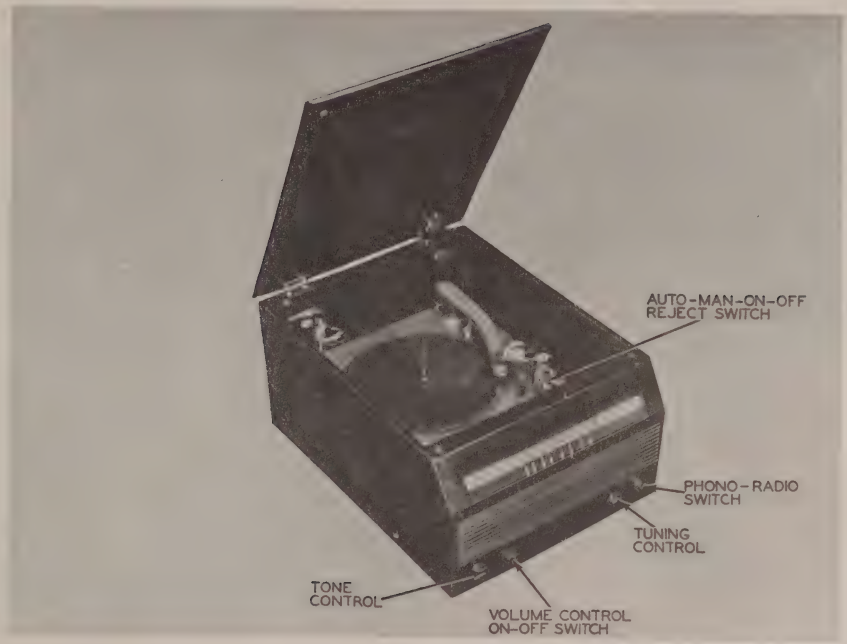
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	24.5 Ω	231 KΩ	231KΩ	19.8KΩ	.5Ω	2.7MEG	.5Ω	12.5 Ω
2	14A7	39 Ω	231 KΩ	231 KΩ	0Ω	222KΩ	2.7MEG	0Ω	24.5 Ω
3	14B6	0Ω	700 KΩ	12MEG	0Ω	470KΩ	470KΩ	INF	12.5 Ω
4	50A5	87Ω	230KΩ	231KΩ	0Ω	0Ω	450KΩ	130 Ω	39 Ω
5	35Y4	112 Ω	110 Ω	INF	110 Ω	230K	INF	230KΩ	87 Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

471-9

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



GRANTLINE MODEL 6547

TRADE NAME	Grantline, Model 6547
MANUFACTURER	W. T. Grant Co., 1441 Broadway, N. Y., N. Y.
TYPE SET	AC Operated Combination Automatic Phono. - Superheterodyne Receiver, Self Contained Loop Antenna
TUBES (FIVE)	Types, 14Q7 Converter, 14A7 IF Amp., 14B6 Det.-AVC-AF, 50A5 Power Output, 35Y4 Rectifier.
POWER SUPPLY	105-125 Volts AC
TUNING RANGE—BROADCAST	540-1700KC RATING .240 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

Use isolation transformer if available. If not, connect capacitor in series with the low side of the signal generator and B-. Set volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.01 MFD.	High side to stator of rear section of variable. Low side to B-.	455KC	Quiet point at high freq. end of dial.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
100 MMF.	High side to ant. lead. Low side to chassis.	1720KC	High freq. end (Fully clockwise)	"	A5	" " " "
100 MMF.	"	1500KC	Tune for maximum output.	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: GRANTLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	14Q7	14Q7	8AL	
2	IF Amp.	14A7	14A7	8V	
3	Det.-AVC-AF	14B6	14B6	8W	
4	Power Output	50A5	50A5	6AA	
5	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GRANTLINE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	A25.019	2N511	M-2x40-150	TA-440	PRSA150-40-40	BRL4416	Filter
B	40	150					"	"	
7	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	Line Filter
8	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	50A5 Plate Bypass
9	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	Audio Coupling
10	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	" "
11	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	AVC Filter
12	.25	200		TP430	S-4-25	TC-2	484-.25	DT4P25	Line Isolation
13	.002	200		TP405	S-6-002	TC-22	484-002	DT6D2	Ant. Coupling
14	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	Tone Compensation
15	250	500		MC240	M0.5-325	1FM-325	1468-00025	5W5T25	Audio Plate Bypass
16	250	500		MC240	M0.5-325	1FM-325	1468-00025	5W5T25	IF Bypass Vol. Cont.
17	50	500		MC225	M0.5-45	1FM-45	1468-00005	5W5Q5	Phono. Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GRANTLINE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
18A	500KΩ	1	A-9.066	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 18A per instructions
C	Switch		" "	M26	41	SW-A	" " " "
19A	100KΩ	1	A-9.068	MR39	D13-128	M-51-Z	Tone Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 19A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GRANTLINE PART No.	IRC PART No.	IDENTIFICATION CODES
20	22KΩ	¼		BTS-22K	Red-Red-Or. Oscillator Grid
21	10 Meg.	¼		BTS-10 Meg.	Br.-Blk.-Blue AVC Network
22	3.3 Meg.	¼		BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
23	10 Meg.	¼		BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
24	470KΩ	¼		BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
25	470KΩ	¼		BTS-470K	Yl.-Vi.-Yl. Output Grid
26	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
27	220KΩ	¼		BTS-220K	Red-Red-Yl. Line Isolation
28	1000Ω	2		BT-2-1000	Br.-Blk.-Red Filter
29	2.2 Meg.	¼		BTS-2.2 Meg.	Red-Red-Grn. Series Phono.

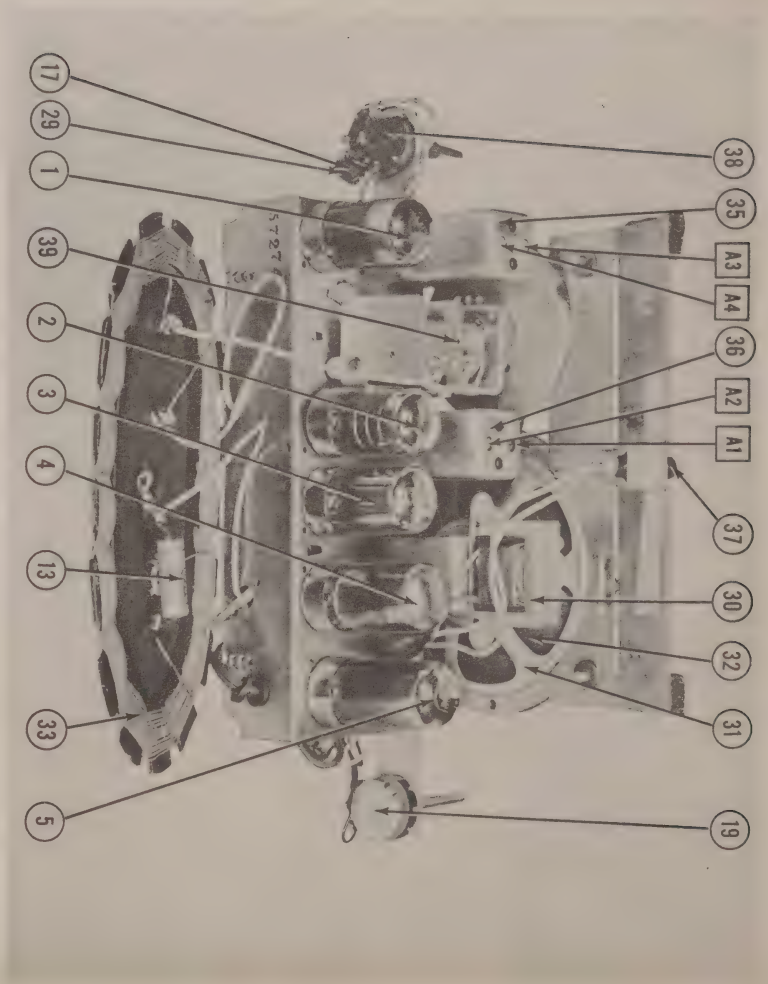
TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: GRANTLINE PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
30	1700Ω	3.2Ω	155Ω	.5Ω	Part of B-11.037	A-3676	T-22845		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: GRANTLINE PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-105		
31	PM	3.2Ω	B-11.037	Mod. P5-X		
	CONE DIA.	VC DIA.				
32	4-5/8"	9/16"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA GRANTLINE PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
33	Loop Ant.	0Ω	1.3Ω	B5.006		
34	Osc. Coil	.8Ω	6.2Ω	B2.192	14-1040*	*Add 50 MMFD. cap. from grid to high side tuning cap.
35	Input IF	21.5Ω	21Ω	C2.191-1	16-6666	
36	Output IF	14.2Ω	14.5Ω	C2.191-2	16-6667	

DIAL LIGHT

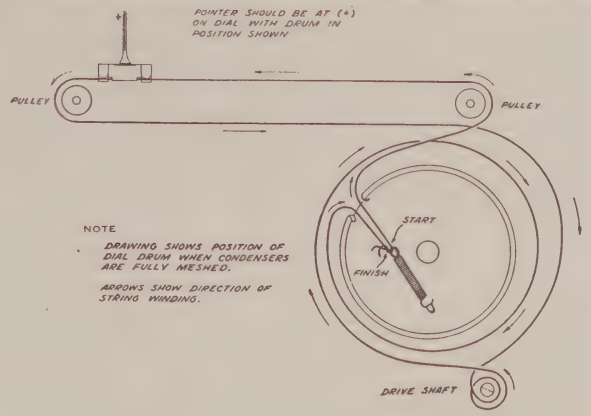
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA GRANTLINE PART No.		INSTALLATION NOTES
37	Bayonet	6-8	0.15	Brown			Type 47

MISCELLANEOUS

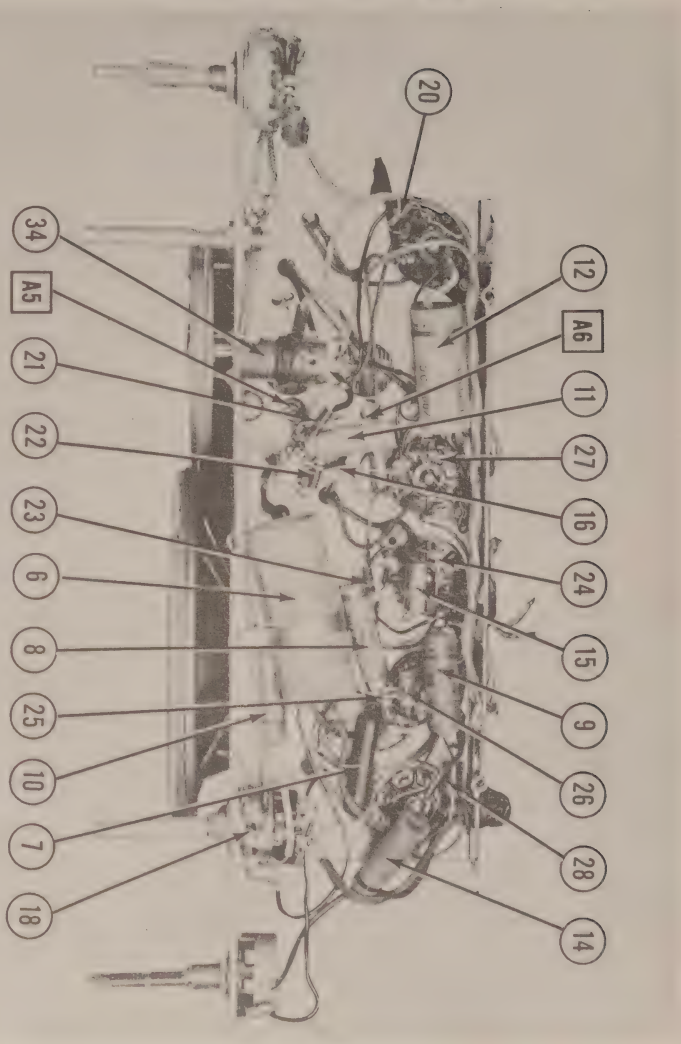
ITEM No.	PART NAME	GRANTLINE PART No.	NOTES
38	Switch		
39	Tuning Cap.		2 Gang Variable Cap.

DISASSEMBLY INSTRUCTIONS

1. Remove the four push-on type control knobs and felt washers.
2. Remove five wood screws and washers holding inside panel board of cabinet.
3. Remove two wood screws holding loop antenna to panel board. Remove panel board from cabinet.
4. Remove record changer mounting bolts.
5. Remove four wood screws and washers from front changer mounting board. Slide board out from under changer and remove from cabinet.
6. Remove machine screws and washers holding chassis to chassis board.
7. Lift changer, radio chassis and loop antenna from cabinet.
8. Unsolder pickup leads from terminal strip.
9. Remove two machine screws holding phono-motor switch cap. Remove cap.
10. Unsolder the two blue and white leads from the phono-motor switch.

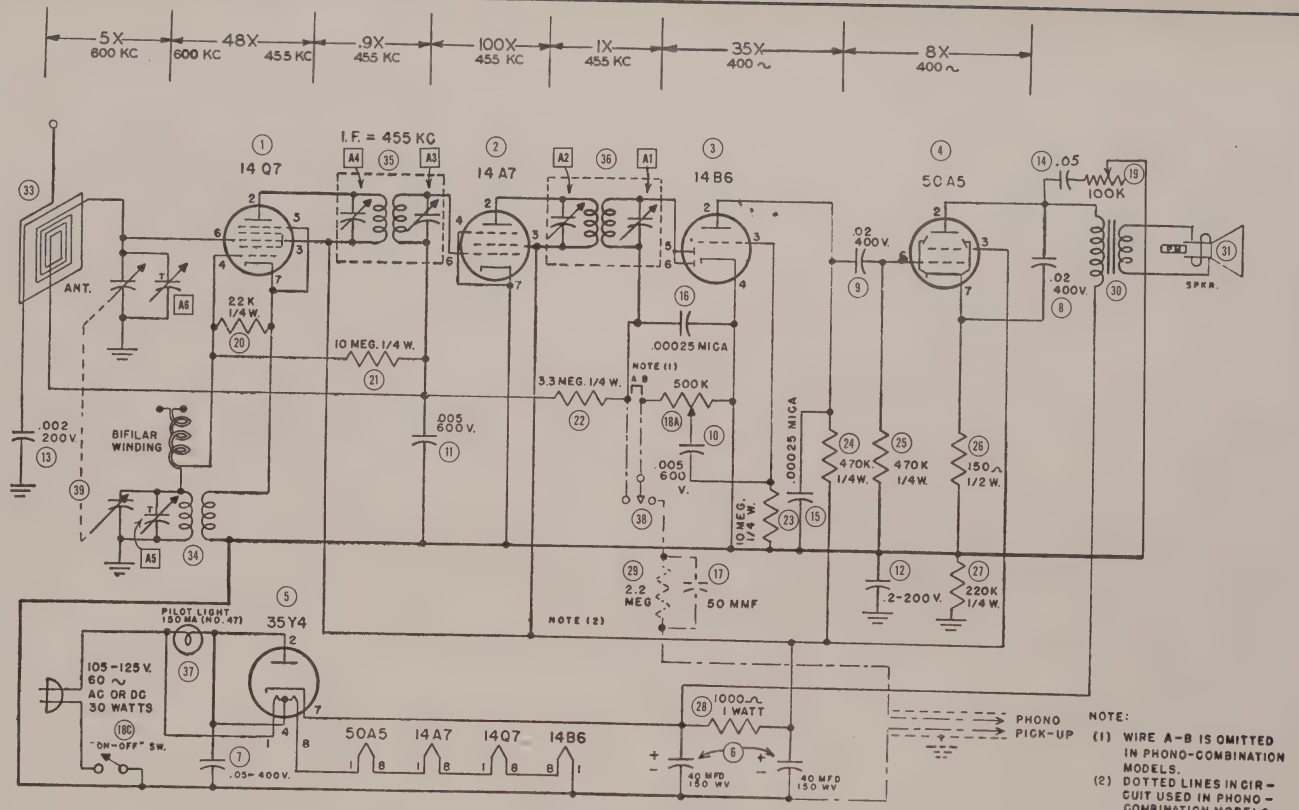

POINTER SHOULD BE AT (+) ON DIAL WITH DRUM IN POSITION SHOWN
PULLEY
PULLEY
START
FINISH
DRIVE SHAFT
NOTE
DRAWING SHOWS POSITION OF DIAL DRUM WHEN CONDENSERS ARE FULLY MESHED.
ARROWS SHOW DIRECTION OF STRING WINDING.

CHASSIS—BOTTOM VIEW



GRANTLINE MODEL 6547

GRANTLINE MODEL 6547



NOTE: VOLTAGE AND RESISTANCE READINGS TAKEN IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	25V.AC	100V.DC	100V.DC	-6.5V.DC	0V.	-4V.DC	0V.	13V.AC
2	14A7	37V.AC	100V.DC	100V.DC	0V.	0V.	-4V.DC	0V.	25V.AC
3	14B6	0V.	62V.DC	-55V.DC	0V.	-55V.DC	-55V.DC	0V.	13V.AC
4	50A5	87V.AC	112V.DC	100V.DC	0V.	0V.	0V.	6.3V.DC	37V.AC
5	35Y4	117V.AC	113V.AC	0V.	113V.AC	0V.	0V.	118V.DC	87V.AC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	22Ω	100KΩ	100KΩ	20KΩ	.5Ω	2.3MEG.	.5Ω	12Ω
2	14A7	33Ω	100KΩ	100KΩ	0Ω	205KΩ	2.3MEG.	0Ω	22Ω
3	14B6	0Ω	570KΩ	10MEG.	0Ω	540KΩ	540KΩ	0Ω	12Ω
4	50A5	75Ω	100KΩ	100KΩ	0Ω	0Ω	490KΩ	135Ω	33Ω
5	35Y4	100Ω	97Ω	INF.	97Ω	INF.	INF.	100KΩ	75Ω

NOTE:
(1) WIRE A-B IS OMITTED IN PHONO-COMBINATION MODELS.
(2) DOTTED LINES IN CIRCUIT USED IN PHONO-COMBINATION MODELS ONLY.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

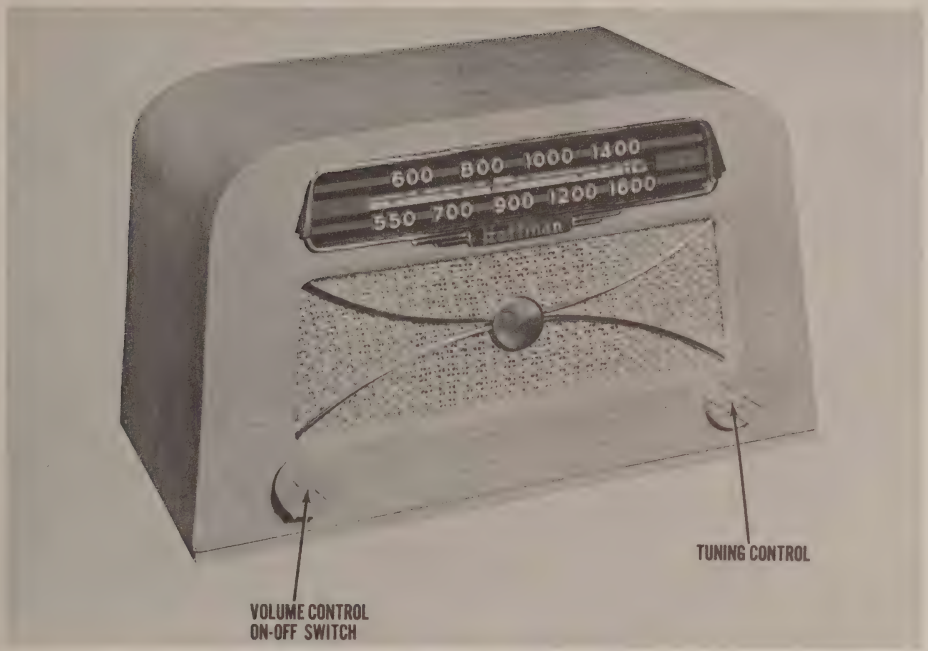
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

471-10

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement. –

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HOFFMAN
MODELS A 202, A 309



HOFFMAN
MODELS A 202, A 309

HOFFMAN MODEL A-309

TRADE NAME	Hoffman Models A-202, A-309 (CH.119)
MANUFACTURER	Hoffman Radio Corp., 3761 S. Hill St., Los Angeles, Calif.
TYPE SET	AC-DC Superheterodyne-Self Contained Loop Antenna
TUBES (SIX)	Types 12BA6 RF Amp., 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 35L6G/GT Power Output, 35W4 Rectifier
POWER SUPPLY	117 Volts AC-DC RATING .245 Amps. @ 117V AC
TUNING RANGE—BROADCAST	530-1620KC

ALIGNMENT INSTRUCTIONS

Use isolation transformer if available. If not connect capacitor in series with low side of signal generator and B-. Volume control should be at maximum and output of signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjustments.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin #1 of 12BA6. Low side to B-.	455KC	Fully clockwise	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation trans. is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
200 MMFD	High side to ant. terminal and low side to chassis.	1620KC	"	"	A5	Adjust for maximum output.
200 MMFD	"	1400KC	Tune for maximum output.	"	A6	"

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12BA6	12BA6	7CC	
2	Converter	12BE6	12BE6	7CH	
3	IF Amp	12BA6	12BA6	7CC	
4	Det.-AVC-AF	12AT6	12AT6	7ET	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35W4	35W4	5EC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HOFFMAN PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	30	150	4201	DY-5030-150	EL-35	AF1010D	UP6BJ34	FP214	▲ Filter
B	50	150							◢ "
8	.05	400	4101	S-4-05	TC-15	484-05	DT4S5	TP426	Line Filter
9	.2	200	4108	S-4-2	TC-2	434-.2	DT4P2	TP428	Line Isolation
10	.02	400	4106	S-4-02	TC-12	484-02	DT4S2	TP423	Output Plate Bypass
11	.005	600	4102	S-6-005	TC-25	684-005	DT6D5	TP408	Audio Coupling
12	.005	600	4102	S-6-005	TC-25	684-005	DT6D5	TP408	" "
13	.05	200	4100	S-4-05	TC-15	484-05	DT4S5	TP426	AVC Filter
14	.005	600	4102	S-6-005	TC-25	684-005	DT6D5	TP408	Ext. Ant. Isolation
15	270	500	4001	MO.5-325	1FM-325	1468-00025	5W5T25	MC240	Audio Plate Bypass
16	270	500	4001	MO.5-325	1FM-325	1468-00025	5W5T25	MC240	RF Bypass Diode
17	100	500	4000	MO.5-31	1FM-31	1468-0001	5W5T1	MC235	Osc. Grid Capacitor
18	100	500	4000	MO.5-31	1FM-31	1468-0001	5W5T1	MC235	RF Coupling
19	100		4012						Fixed Trimmer Cer.
20	100		4012						" " "
21	100		4012						" " "
22	100		4012						" " "

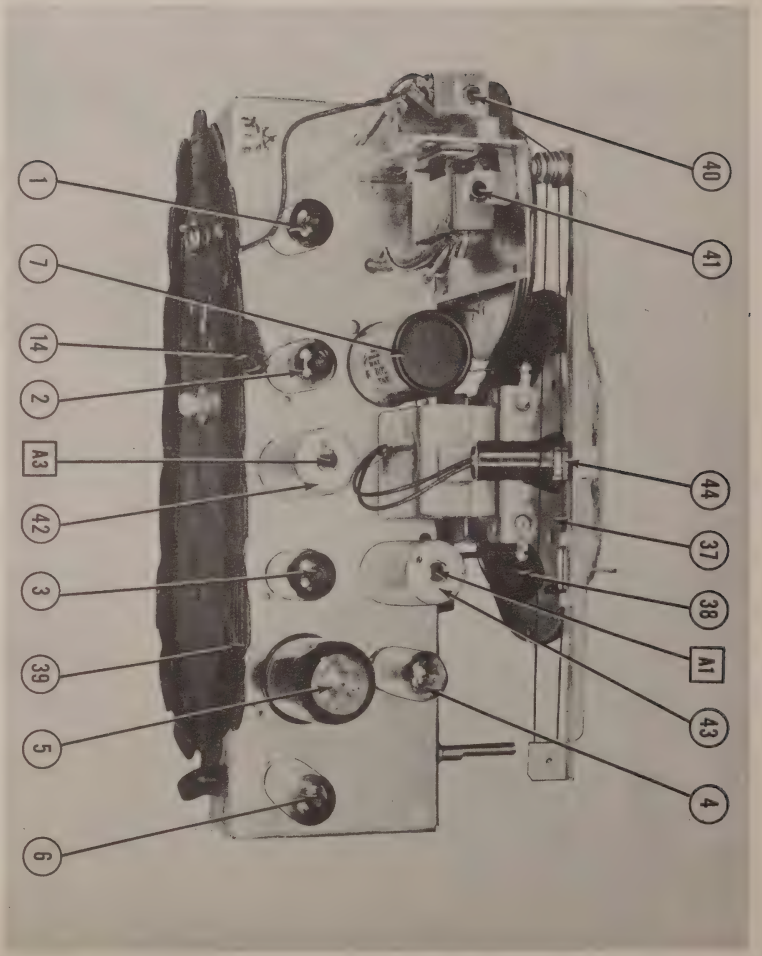
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HOFFMAN PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23A	500KΩ	1	4802	MR48	D13-133	M-60-Z	Volume Control.
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 23A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HOFFMAN PART No.	IRC PART No.	IDENTIFICATION CODES
24	2200Ω	½	4512	BTS-2200	Red-Red-Red RF Plate Load
25	47KΩ	½	4504	BTS-47K	Yl.-Vi.-Or. Converter Grid
26	22KΩ	½	4501	BTS-22K	Red-Red-Or. Oscillator "
27	47Ω	½	4508	BW-½-47	Yl.-Vi.-Blk. Surge Limiter
28	2.2 Meg.	½	4502	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
29	47KΩ	½	4504	BTS-47K	Yl.-Vi.-Or. RF Filter
30	10 Meg.	½	4505	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
31	220KΩ	½	4500	BTS-220K	Red-Red-Yl. " " Plate Load
32	470KΩ	½	4506	BTS-470K	Yl.-Vi.-Yl. Output Grid
33	150Ω	½	4510	BW-½-150	Br.-Grn.-Br. " Cathode
34	500Ω	5	4700	AB-500	Filter
35	470KΩ	½	4506	BTS-470K	Yl.-Vi.-Yl. Line Isolation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		HOFFMAN PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
36	1600Ω	3.25Ω	180Ω	.8Ω	5101	A-3865			

SPEAKER

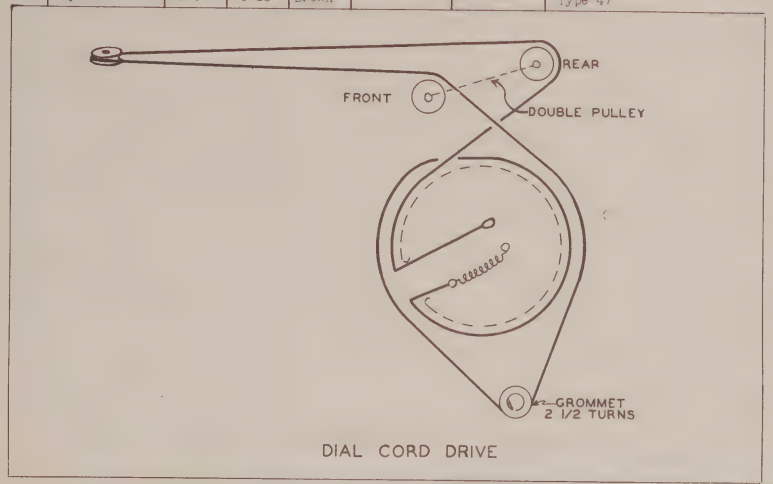
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			HOFFMAN PART No.	JENSEN PART No.		
37	FIELD PM	VC IMP. 3.25Ω	9003	ST-105 Mod. P5-X		
38	CONE DIA. 4-3/4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	HOFFMAN PART No.	MEISSNER PART No.	
39	Loop	.2Ω	1Ω			
40	RF Coil		10Ω			
41	Osc. Coil	6.5Ω	1Ω			
42	Input IF	28Ω	27Ω		16-6568	Remove 100MMF condensers Item Nos. 19 & 20.
43	Output IF	28Ω	27Ω		16-6669	" " " " " 21 & 22.

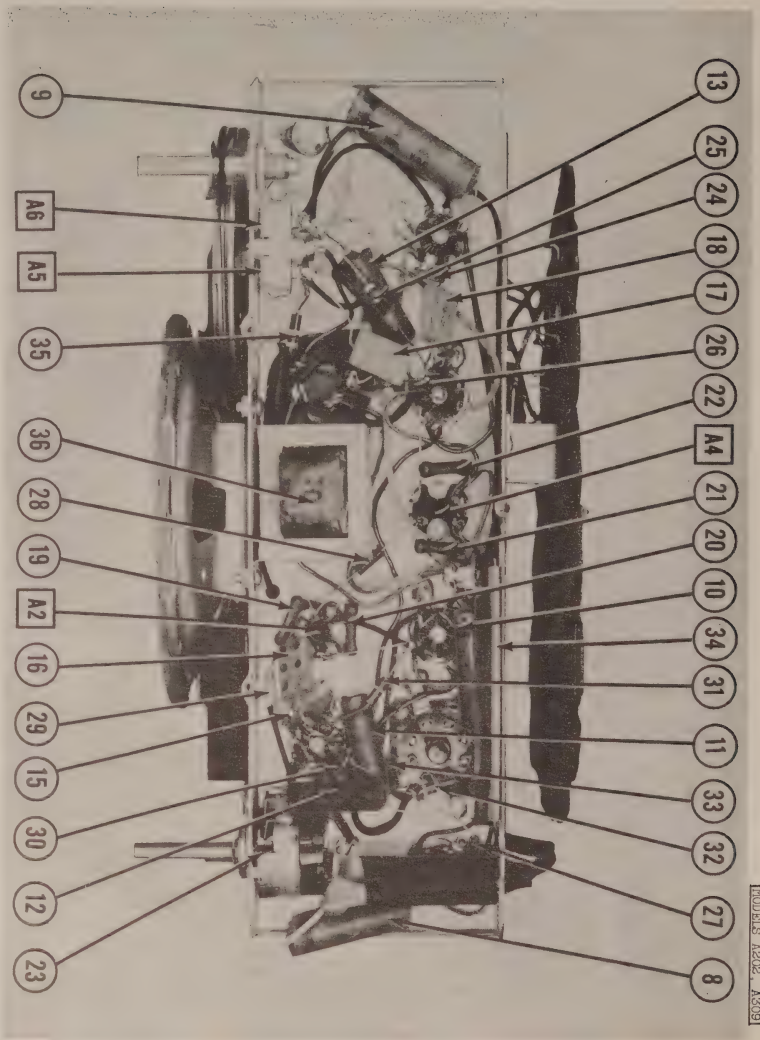
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					HOFFMAN PART No.		
44	Bayonet	6-8	0.15	Brown			Type 47



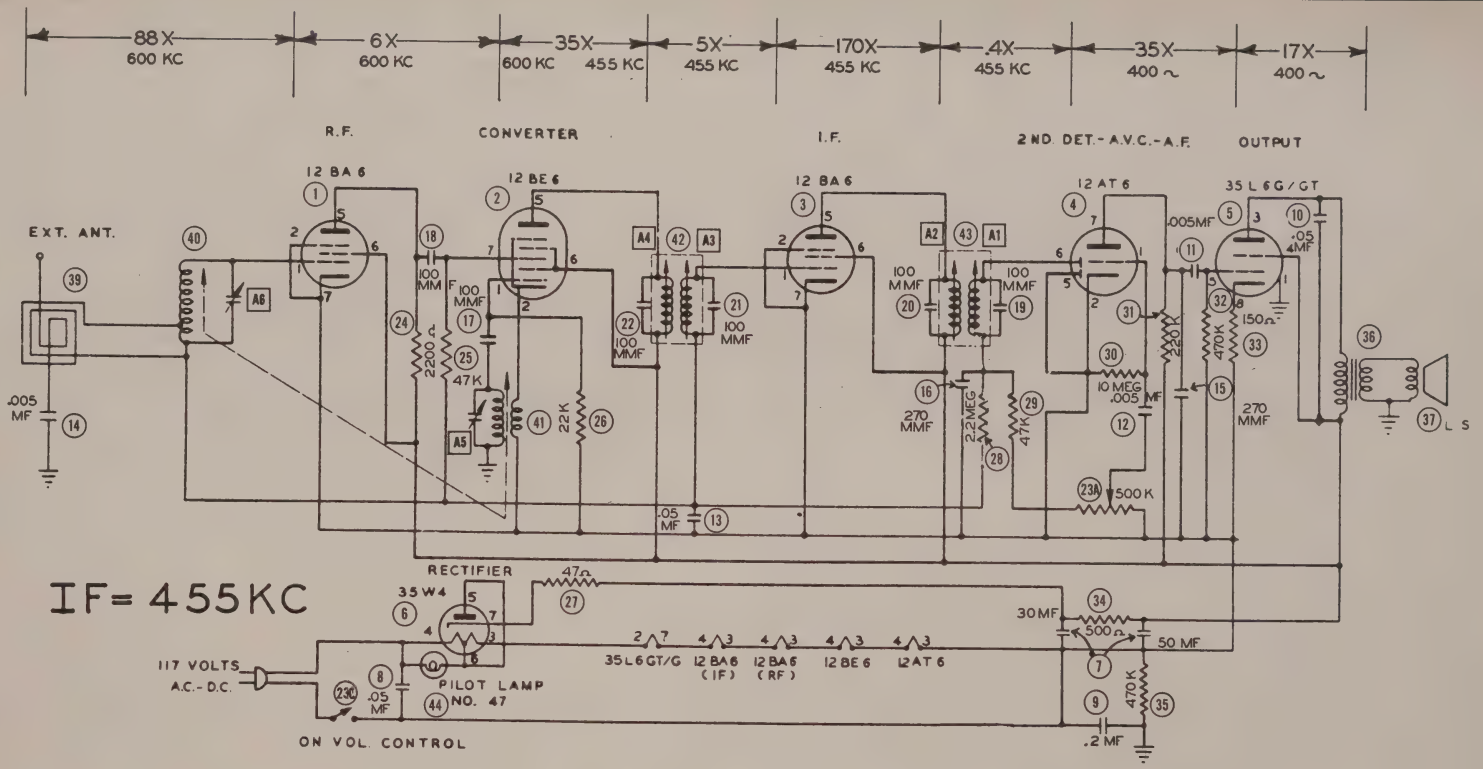
DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



HOFFMAN MODELS A202, A209

HOFFMAN MODELS A202, A209



IF= 455KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12BA6	-2.4V.DC	0V.	23V.AC	36V.AC	68V.DC	82V.DC	0V.	
2	12BE6	-5.5V.DC	0V.	11V.AC	23V.AC	82V.DC	82V.DC	-.8V.DC	
3	12BA6	-1V.DC	0V.	36V.AC	48V.AC	82V.DC	82V.DC	0V.	
4	12AT6	-.8V.DC	0V.	0V.	11V.AC	0V.	-.5V.DC	55V.DC	
5	35L6GT	0V.	73V.AC	78V.DC	82V.DC	0V.	0V.	48V.AC	4.8V.DC
6	35W4	117V.AC	0V.	73V.AC	117V.AC	113V.AC	113V.AC	115V.DC	

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12BA6	2.2MEG.	0Ω	24Ω	37Ω	300KΩ	300KΩ	0Ω	
2	12BE6	22KΩ	.5Ω	12Ω	24Ω	300KΩ	300KΩ	2.2MEG.	
3	12BA6	2.2MEG.	0Ω	37Ω	47Ω	300KΩ	300KΩ	0Ω	
4	12AT6	8MEG.	0Ω	0Ω	12Ω	0Ω	520KΩ	520KΩ	
5	35L6GT	420KΩ	75Ω	300KΩ	300KΩ	500KΩ	0Ω	47Ω	145Ω
6	35W4	100Ω	INF.	75Ω	100Ω	95Ω	95Ω	300KΩ	

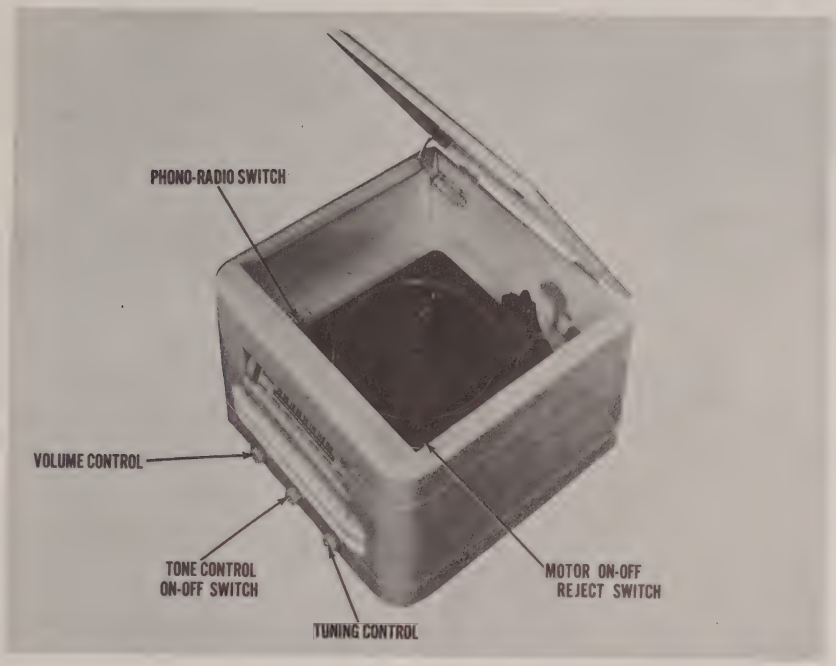
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

471-11

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



HOFFMAN
MODEL A401

HOFFMAN
MODEL A401

HOFFMAN MODEL A401

TRADE NAME	Hoffman, Model A401 (CH. 102)
MANUFACTURER	Hoffman Radio Corp., 3761 S. Hill St., Los Angeles, Calif.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne Receiver-Self Contained Loop Ant.
TUBES (SIX)	Types 6SK7 RF Amp, 6SA7 Converter, 6SQ7 IF Amp., 6SQ7 Det-AVC-AF, 6K6GT Power Output, 6X5GT Rectifier
POWER SUPPLY	117 Volts AC RATING .480 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1600KC

ALIGNMENT INSTRUCTIONS

Set volume control at maximum and keep output of signal generator no higher than is necessary to obtain output reading. When aligning, keep chassis and loop ant. in same relative position as when set is in cabinet. Use insulated alignment screwdriver for adjustments.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD.	High side to stator or rear section of variable, low side to chassis.	455KC	Point of no interfering signal	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
200MMFD.	High side to ant. terminal. Low side to chassis.	1600KC	Variable fully open.	"	A5	"
200MMFD.	"	1400KC	Tune for maximum output.	"	A6,A7	"

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SG7	6SG7	8BK	Some sets use 6SK7
4	Det.-AVC-AF	6SQ7	6SQ7	8L	
5	Power Output	6K6GT	6K6GT	7D	
6	Rectifier	6X5GT	6X5GT	6C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HOFFMAN PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	20	450	4200	DY-312	EL-350	AF44J	UP6DJ38	FP339	◢ Filter
B	20	450							▲ "
C	20	25				PRS25-25	BR202A		Cath. Bypass
8	.01	600	4105	S-6-01	TC-11	684-01	DT6S1	TP410	Line Bypass
9	.001	600	4104	S-6-001	TC-21	684-001	DT6D1	TP404	Output Plate Bypass
10	.01	600	4103	S-6-01	TC-11	684-01	DT6S1	TP410	Audio Coupling
11	.01	600	4103	S-6-01	TC-11	684-01	DT6S1	TP410	Tone Compensation
12	.005	600	4102	S-6-005	TC-25	684-005	DT6D5	TP403	Audio Coupling
13	.05	400	4101	S-4-05	TC-15	484-05	DT4S5	TP426	IF Cath. Bypass
14	.05	400	4101	S-4-05	TC-15	484-05	DT4S5	TP426	RF Bypass Pwr. Supp.
15	.05	400	4101	S-4-05	TC-15	484-05	DT4S5	TP426	Screen Bypass
16	.05	200	4100	S-4-05	TC-15	484-05	DT4S5	TP426	AVC Filter
17	.05	200	4100	S-4-05	TC-15	484-05	DT4S5	TP426	" "
18	100	500	4000	MO.5-31	1FM-31	1468-0001	5W5T1	MC235	Audio Plate Bypass
19	100	500	4000	MO.5-31	1FM-31	1468-0001	5W5T1	MC235	IF Bypass Diode
20	100	500	4000	MO.5-31	1FM-31	1468-0001	5W5T1	MC235	IF Bypass Vol. Cont.
21	100	500	4000	MO.5-31	1FM-31	1468-0001	5W5T1	MC235	Osc. Grid Capacitor

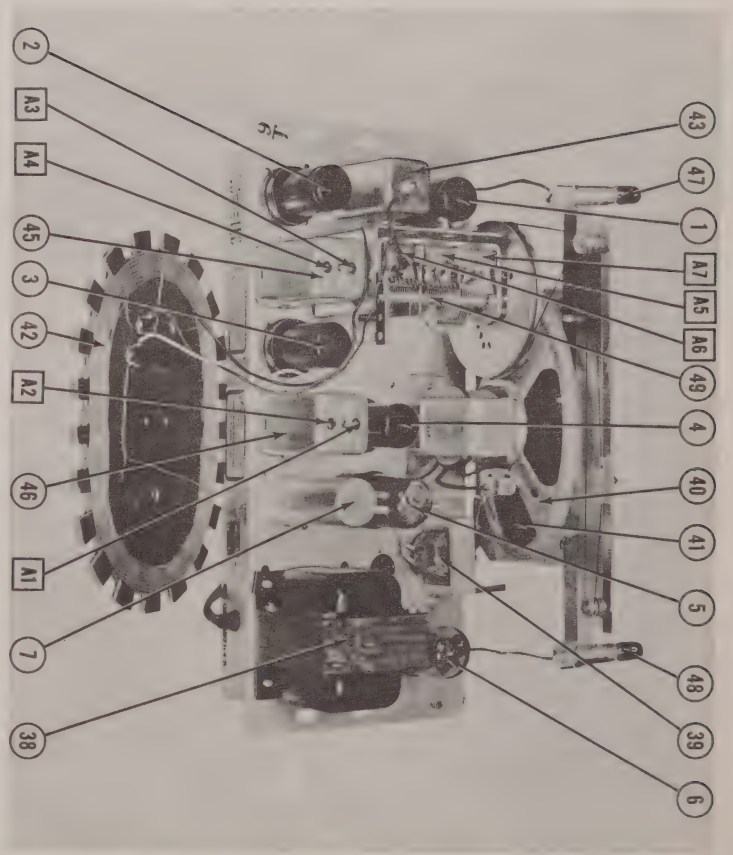
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HOFFMAN PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22A	250KΩ	1	4805	MR44	D13-130	M-64-A	Tone Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 22A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
23A	500KΩ	1	4804	MR48	D13-133	M-60-Z	Volume Control.
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 23A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HOFFMAN PART No.	IRC PART No.	IDENTIFICATION CODES
24	220KΩ	½	4500	BTS-220K	Red-Red-Yl. AVC Network
25	10KΩ	½		BTS-10K	Br.-Blk.-Or. Oscillator Grid
26	2.2 Meg.	½	4502	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
27	10KΩ	2	4503	BT-2-10K	Br.-Blk.-Or. Screen Dropping
28	47KΩ	½	4504	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
29	10 Meg.	½	4505	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
30	220KΩ	½	4500	BTS-220K	Red-Red-Yl. 1st AF Plate Load
31	470KΩ	½	4506	BTS-470K	Yl.-Vi.-Yl. Output Grid
32	56Ω	½	4507	BTS-56Ω	Grn.-Blue-Br. Output Cathode
33	47Ω	½	4508	BW-½-47	Yl.-Vi.-Blk. 1st AF Cathode
34	330Ω	½	4509	BW-½-330	Or.-Or.-Br. Feedback
35	15KΩ	½		BTS-15K	Br.-Grn.-Or. Oscillator Grid
36	10 Meg.	½	4505	BTS-10 Meg.	Br.-Blk.-Blue AVC Network
37	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 2nd IF Transformer Shunt

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	SEC. 3	HOFFMAN PART No.	STANCOR PART No.	THORDARSON PART No.	
38	117V AC @ .480A	580V CT @ .063A	5.9VAC @ 2.65A		5000	P-1620*	T13R20*	*Use universal mounting brackets and drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		HOFFMAN PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
39	7750Ω	3.1Ω	580Ω	.92Ω	5100	A-3078	T14S81		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			HOFFMAN PART No.	JENSEN PART No.		
	FIELD RES.	VC IMP.				
40	1460Ω	3.1Ω	9000			
	CONE DIA.	VC DIA.				
41	4"x6"	3/4"	NOT READILY REPLACEABLE - USE COMPLETE SPEAKER UNIT.			

R F COILS

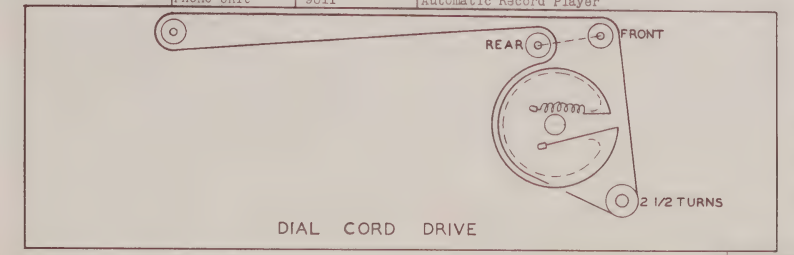
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	HOFFMAN PART No.	MEISSNER PART No.	
42	Loop Ant.	0Ω	1.3Ω	5223		
43	RF Coil	.5Ω	5.8Ω	5202	14-7558	
44	Osc. Coil		5.5Ω	5200	14-1040	
45	Input IF	14.4Ω	14.4Ω	5203	16-3658	
46	Output IF	26.5Ω	24Ω	5204	16-3662	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					HOFFMAN PART No.		
47	Bayonet	6-8	0.25	Blue			Type 44
48	Bayonet	6-8	0.25	Blue			Type 44

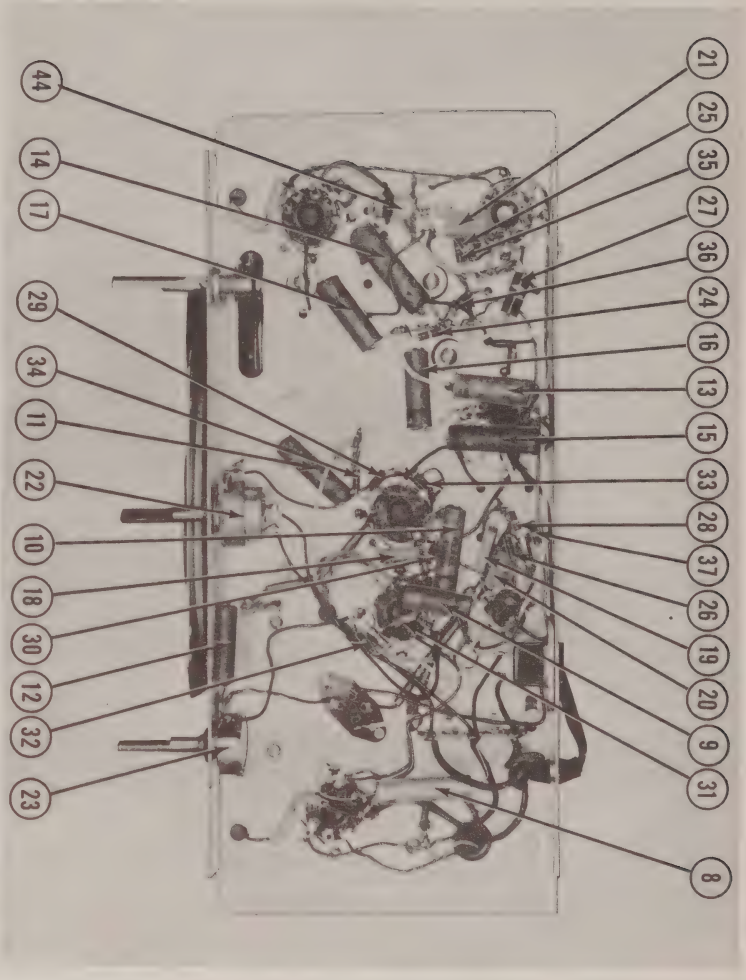
MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
49	3-Gang Var. Cap.	4400	(388-3d8-180 MMF)Includes RF, Ant, Osc. Trimmers
50	Radio-Phono SW	6001	D.P.D.T.
	Phono Unit	9011	Automatic Record Player

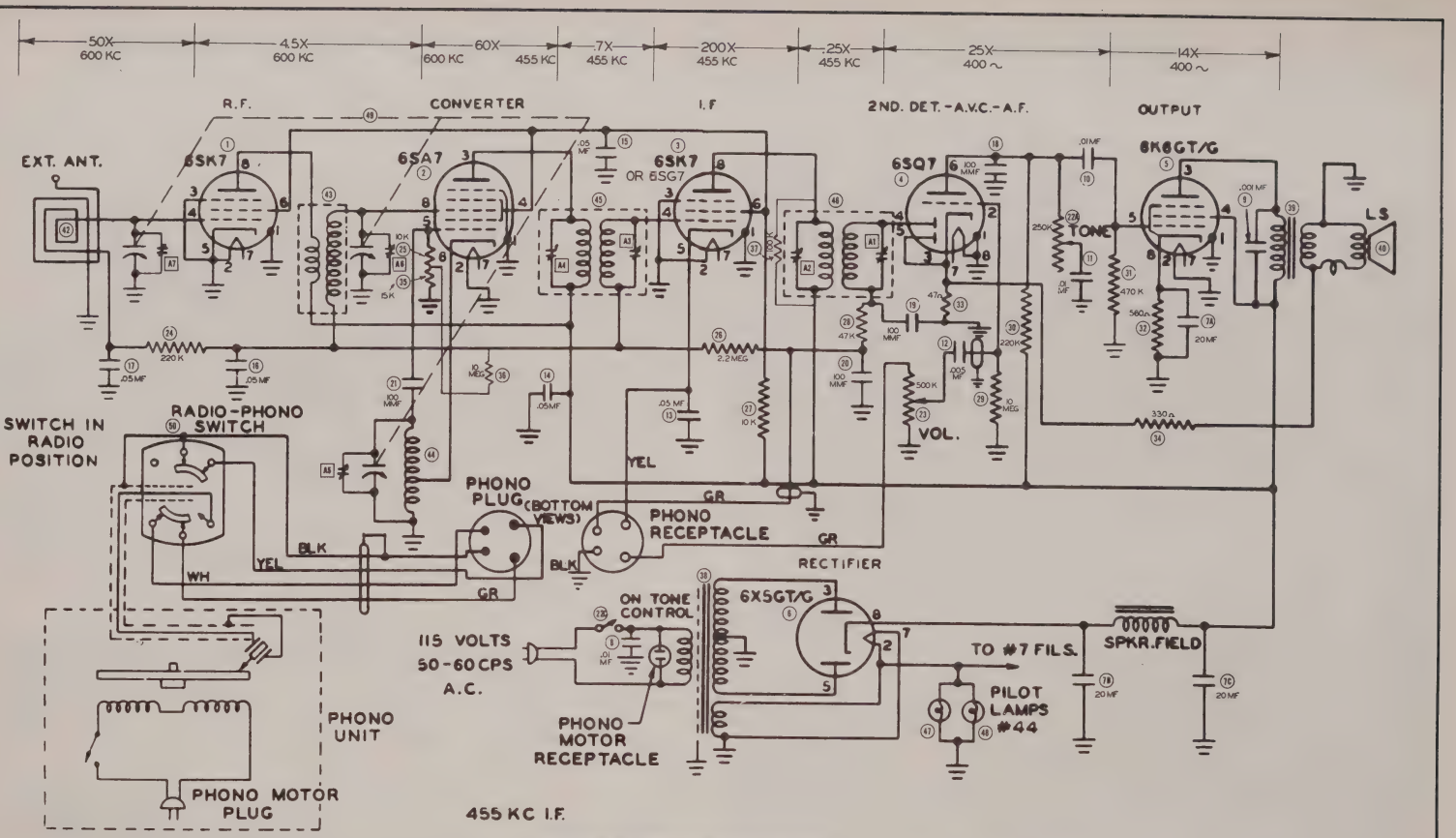


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



HOFFMAN MODEL A401



NOTE: VOLTAGE AND RESISTANCE READING TAKEN IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	0V.	-.5V.DC	0V.	95V.DC	61V.AC	222V.DC
2	6SA7	0V.	0V.	222V.DC	95V.DC	-6V.DC	0V.	61V.AC	-6V.DC
3	6SG7	0V.	0V.	0V.	-.6V.DC	0V.	95V.DC	61V.AC	222V.DC
4	6SQ7	0V.	-.7V.DC	0V.	-3V.DC	0V.	107V.DC	61V.AC	0V.
5	6K6GT	0V.	0V.	215V.DC	225V.DC	0V.	325V.DC	61V.AC	16V.DC
6	6Y5GT	0V.	61V.AC	310V.AC	0V.	310V.AC	0V.	0V.	325V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	0Ω	2 MEG.	0Ω	82KΩ	∞	69KΩ
2	6SA7	0Ω	0Ω	69KΩ	82KΩ	23KΩ	.5Ω	∞	1.8 MEG.
3	6SG7	0Ω	0Ω	0Ω	1.8MEG.	0Ω	82KΩ	∞	69KΩ
4	6SQ7	0Ω	7.5 MEG.	32Ω	480KΩ	33Ω	310KΩ	∞	0Ω
5	6K6GT	0Ω	0Ω	70KΩ	70KΩ	450KΩ	70KΩ	∞	530Ω
6	6Y5GT	0Ω	∞	310Ω	INF.	280Ω	INF.	0Ω	70KΩ

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

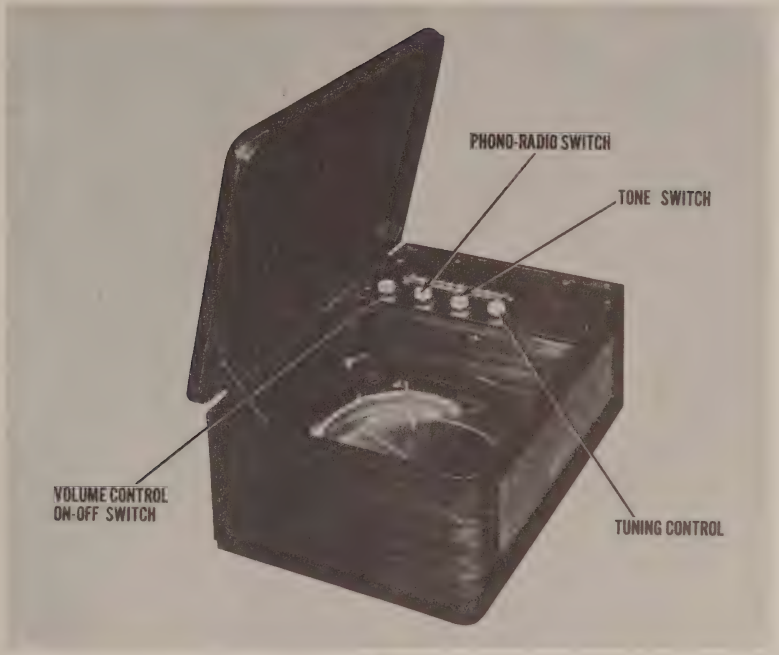
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

471-12

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

LEWYT
MODEL 615A



LEWYT MODEL 615A

LEWYT
MODEL 615A

TRADE NAME	Lewyt, Model 615A
MANUFACTURER	Lewyt Corp., 60 Broadway, Brooklyn 11, N.Y.
TYPE SET	AC Operated Radio-Phonograph Combination Superheterodyne Receiver - Self Contained Loop Ant.
TUBES (SIX)	Types, 12SK7GT RF Amp., 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC
TUNING RANGE—BROADCAST	550-1630KC RATING .240 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin #8 of 12SA7. Low side to B-.	455KC	High freq. end (Variable fully open)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation trans. is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
.1 MFD.	High side to ext. ant. Low side to ext. ground.	"	Low freq. end	"	A5	Adjust for minimum output.
200 MFD.	"	1630KC	High freq. end	"	A6	Adjust for maximum output.
200 MFD.	"	1400KC	Tune for maximum output.	"	A7	" " " "

DISASSEMBLY INSTRUCTIONS

1. Remove the push-on type control knobs and felt washers.
2. Remove the six Phillips head screws and washers from dial panel.
3. Lift the horizontal and vertical boards holding chassis, out of cabinet.
4. Remove two wood screws from antenna and ground terminal strip on back side of cabinet. Pull terminal strip out of cabinet.
5. Unsolder the antenna and ground leads from terminal lug.
6. Disconnect phono-pickup plug from chassis.
7. Remove three Phillips head screws and washers holding chassis to cabinet.
8. Remove two spring type nuts from bolts holding speaker to cabinet. Remove speaker.
9. Unsolder white and black phono-motor lead from pin #2 on rectifier tube socket.
10. Unsolder other phono motor lead from one side of phono-radio switch.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: LEWYT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.		12SK7GT	8N	
2	Converter		12SA7GT	8AD	
3	IF Amp.		12SK7GT	8N	
4	Det.-AVC-AF		12SQ7GT	8Q	
5	Power Output		35L6GT	7AC	
6	Rectifier		35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: LEWYT PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	50	150		M-5030-150	TA-530	PRSA150-40-40	BRD3515	2N520	Filter - Red
B	30	150							" - Green
8	40	150		M-40-150	TA-401	PRS150-40	BR4015	TC48	Filter
9	20	25		M-25-25	TA-25	PRS25-25	BR252A	TC26	Cath. Bypass
10	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	Line Filter
11	.1	200		S-4-1	TC-1	484-.1	DT4P1	TP428	Line Isolation
12	.005	600		S-6-005	TC-25	684-005	DT6D5	TP408	Output Plate Bypass
13	.005	600		S-6-005	TC-25	684-005	DT6D5	TP408	Audio Coupling
14	.005	600		S-6-005	TC-25	684-005	DT6D5	TP408	Tone Compensation
15	.005	600		S-6-005	TC-25	684-005	DT6D5	TP408	Audio Coupling
16	.1	200		S-4-1	TC-1	484-.1	DT4P1	TP428	AVC Filter
17	250	500		MO.5-325	1FM-325	1468-00025	5W5T25	MC240	Audio Plate Bypass
18	50	500		MO.5-45	1FM-45	1468-00005	5W5Q5	MC225	Tone Compensation
19	150	500		MO.5-315	1FM-315	1468-00015	5W5T15	MC236	Osc. Grid Capacitor
20	10	500		MO3.5-41	MS-41	1469-00001	5R5Q1	MCB215	Fixed Trimmer
21	100	500		MO.5-31	1FM-31	1468-0001	5W5T1	MC235	RF Coupling

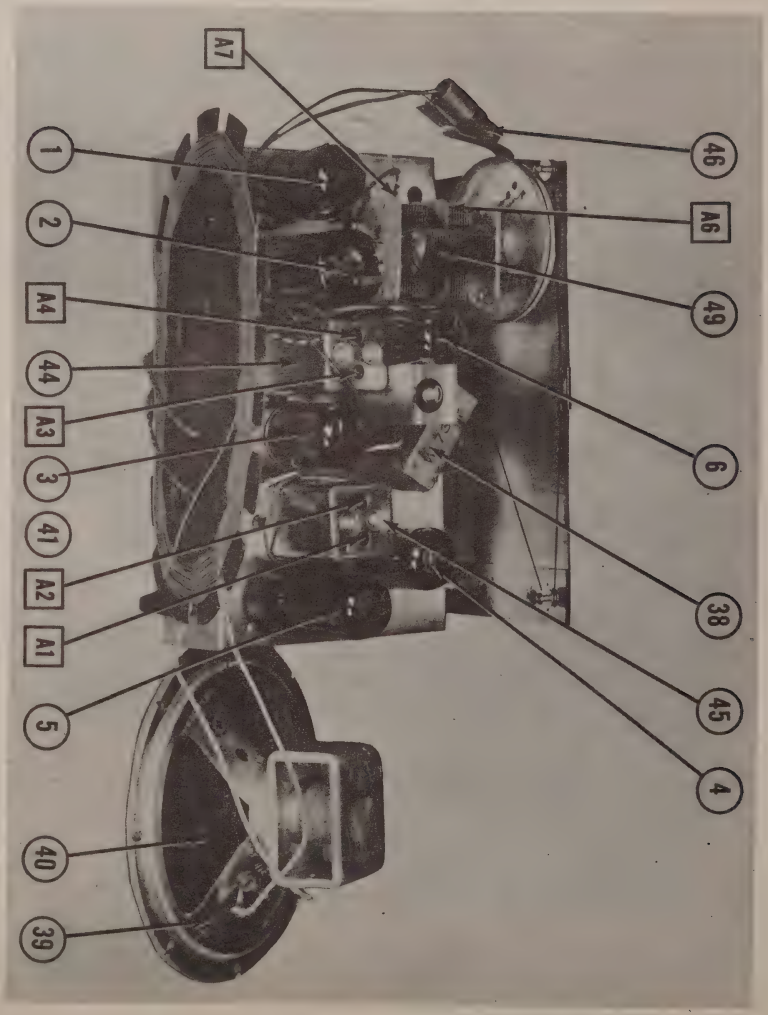
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: LEWYT PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22A	500KΩ	1		MR48	D13-133	M-60-Z	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 22A per instructions.
C	Switch			M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: LEWYT PART No.	IRC PART No.	IDENTIFICATION CODES
23	470Ω	½		BTS-470	Yl.-Vi.-Red RF Plate Load
24	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
25	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Converter Grid
26	18 Meg.	½		BTS-18 Meg.	Br.-Gray-Blue AVC Network
27	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
28	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
29	220KΩ	½		BTS-220K	Red-Red-Yl. 1st AF Plate Load
30	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Tone Compensation
31	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
32	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
33	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Line Isolation
34	330Ω	2		BW-2-330	Or.-Or.-Br. Filter
35	1500Ω	1		BTA-1500	Br.-Grn.-Red Filter
36	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. Phono Shunt
37	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Series Phono

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		LEWYT PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
38	2800Ω	3.1Ω	400Ω	.8Ω	W73	A-3876*	T2S45*		* Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			LEWYT PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-111		
39	PM	3.1Ω	X123	Mod. P6-U		
	CONE DIA.	VC DIA.				
40	5-7/8"	5/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

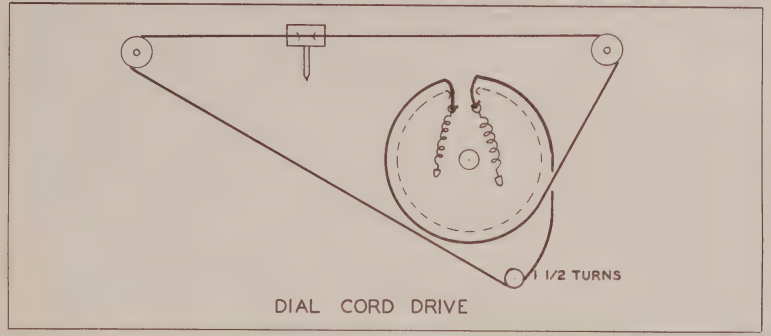
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	LEWYT PART No.	MEISSNER PART No.	
41	Loop	0Ω	1.5Ω	X75		
42	Wave Trap	50.5Ω		W72		
43	Osc. Coil		6Ω	W20	14-1040	
44	Input IF	16Ω	16Ω	W21	16-6658	
45	Output IF	25Ω		W19	16-6670	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					LEWYT PART No.		
46	Bayonet	6-8	0.15	Brown			Type 47

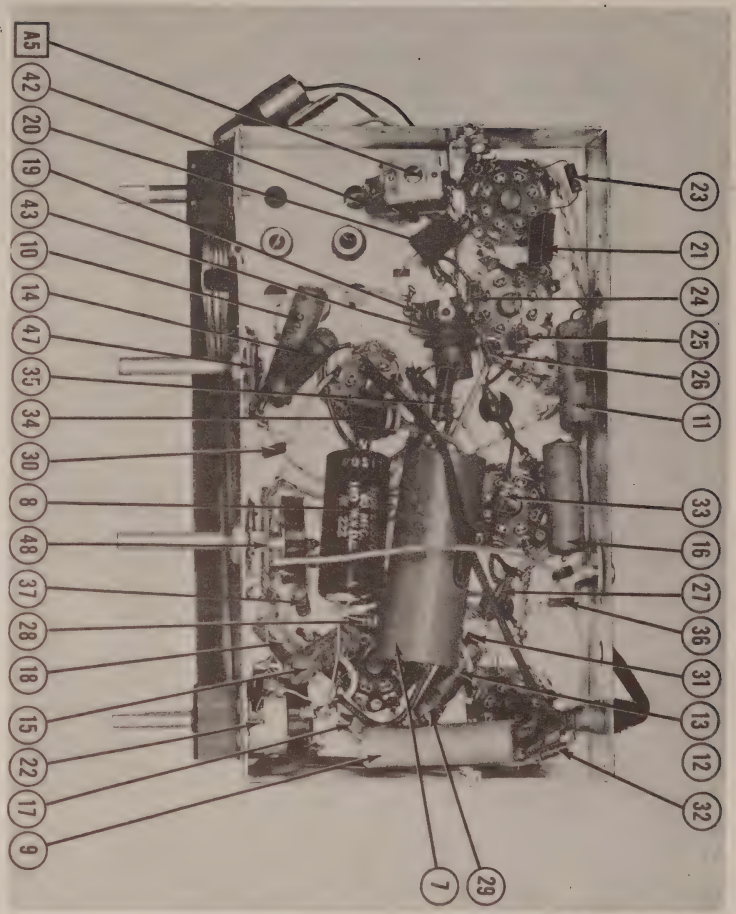
MISCELLANEOUS

ITEM No.	PART NAME	LEWYT PART No.	NOTES
47	Tone Switch	W70	1 Pole, 3 Position
48	Radio-Phono Sw.	W69	2 Pole, 2 Throw
49	2 Gang Var. Cap.	W23	Ant. & Osc. Trimmers Incl.
50	Record Changer	W80	



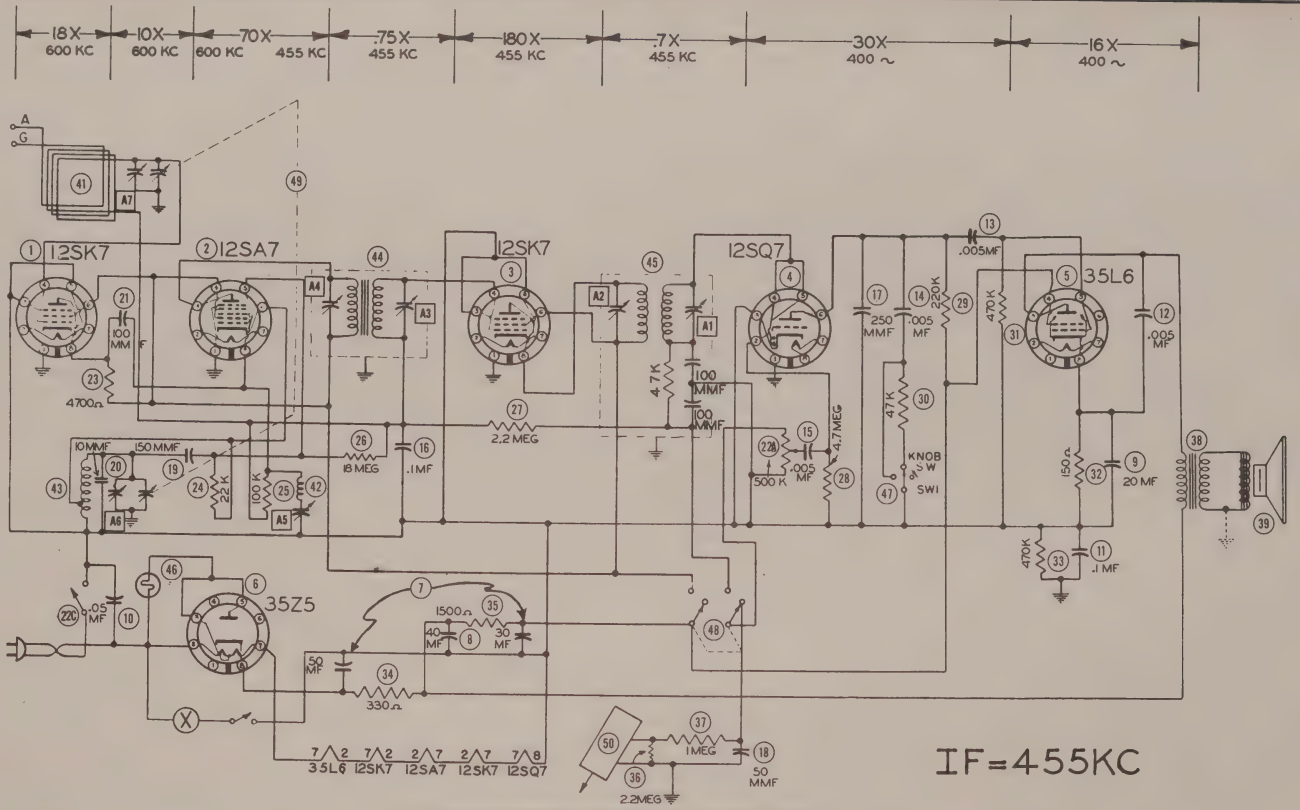
DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



LEWYT MODEL 615A

LEWYT MODEL 615A



NOTE: VOLTAGE AND RESISTANCE READINGS TAKEN IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	0V.	24V.AC	0V.	-.45V.DC	0V.	68V.DC	36V.AC	37 V.DC
2	12SA7GT	0V.	12 V.AC	68V.DC	68V.DC	-4.8V.DC	0V.	24 V.AC	-3 V.DC
3	12SK7GT	0V.	36 V.AC	0V.	-.45V.DC	0V.	68 V.DC	50 V.AC	68V.DC
4	12SQ7GT	0V.	-1.5V.DC	0V.	-.45V.DC	-.45V.DC	53V.DC	12V.AC	0V.
5	35L6GT	0V.	50 V.AC	93V.AC	68 V.DC	0V.	0V.	87 V.AC	4.3V.DC
6	35Z5GT	53V.DC	117 V.AC	13V.AC	68 V.DC	113 V.AC	103 V.DC	87 V.AC	121 V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	390Kn	25n	0n	2 MEG.	0n	70Kn	37n	70Kn
2	12SA7GT	390Kn	13n	70Kn	70Kn	22Kn	.5n	25n	2 MEG.
3	12SK7GT	390Kn	37n	0n	2 MEG.	0n	70Kn	48n	70Kn
4	12SQ7GT	390Kn	6 MEG.	0n	430Kn	430Kn	270Kn	13n	0n
5	35L6GT	0n	48n	70Kn	70Kn	440Kn	INF.	78n	145n
6	35Z5GT	280Kn	78n	98n	70Kn	98n	70Kn	105n	70Kn

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

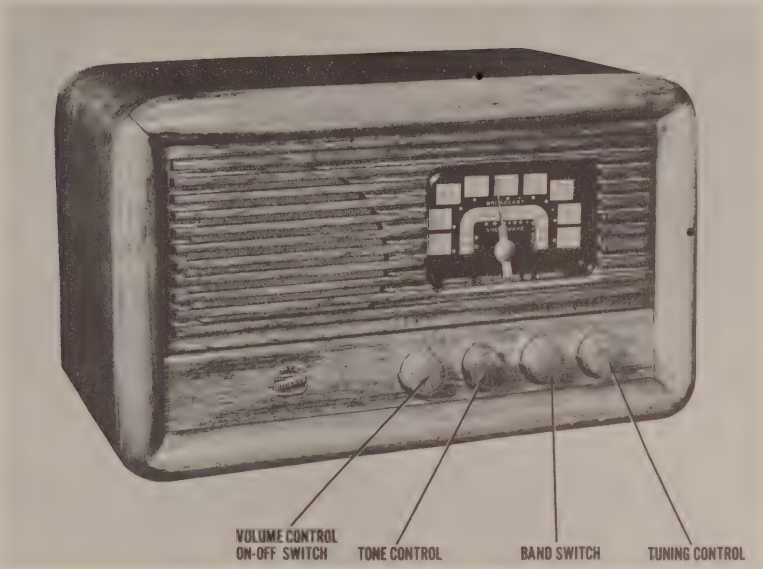
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

471-13

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MINERVA
MODEL W-117-3



MINERVA MODEL W-117-3

TRADE NAME	Minerva Model W-117-3
MANUFACTURER	Minerva Corp. of America, 238 William St., New York, N.Y.
TYPE SET	AC Operated 2 Band Superheterodyne - Self Contained Loop Antenna
TUBES (EIGHT)	Types, 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC, (2) 50A5 Power Output, (2) 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC RATING .390 Amps. @ 117V AC
TUNING RANGE—BROADCAST	540-1640KC SHORT WAVE 5.5 - 19 MC

ALIGNMENT INSTRUCTIONS

Use isolation transformer if available. If not, connect capacitor in series with low side of signal generator to chassis. Volume control in maximum volume position and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin 6 of 6SA7. Low side to chassis.	455KC	BC	High freq.end of dial.(Variable fully open)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
200 MMF.	High side to ext. ant. Low side to ext. ground.	1600KC	"	1600KC	"	A5	" " " "
200 MMF.	"	1400KC	"	Tune for maximum output.	"	A6	" " " "
200 MMF.	"	600KC	"	"	"	A7	Rock dial and adjust for maximum output. Recheck A5 at 1600KC and A6 at 1400KC.
400 ohms	"	18.0MC	SW	18.0MC	"	A8	Adjust for maximum output
400 ohms	"	15.0MC	"	Tune for maximum output.	"	A9	" " " "

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: MINERVA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.		6SK7	8N	
2	Converter		6SA7	8R	
3	IF Amp.		6SK7	8N	
4	Det.-AVC-AF		6SQ7	8Q	
5	Power Output		50A5	6AA	
6	Power Output		50A5	6AA	
7	Rectifier		35Z5GT	6AD	
8	Rectifier		35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MINERVA PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	40	150		DSB-2x40-150	TA-440	PRSA150-40-40	BRD4415	2N511	Filter - Red
B	40	150							" "
10	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	Line Filter
11	.005	600		S-6-005	TC-25	684-005	DT6D5	TP408	Output Plate Bypass
12	.005	600		S-6-005	TC-25	684-005	DT6D5	TP408	" " "
13	.005	600		S-6-005	TC-25	684-005	DT6D5	TP408	Audio Coupling
14	.001	600		S-6-001	TC-21	684-001	DT6D1	TP404	" "
15	.001	600		S-6-001	TC-21	684-001	DT6D1	TP404	Tone Compensation
16	.005	600		S-6-005	TC-25	684-005	DT6D5	TP408	" "
17	.005	600		S-6-005	TC-25	684-005	DT6D5	TP408	Audio Coupling
18	.25	400		S-4-25	TC-2	484-.25	DT4P25	TP430	RF Bypass Pwr. Supp.
19	.05	400		S-4-05	TC-12	484-05	DT4S5	TP426	AVC Filter
20	.01	400		S-4-01	TC-11	484-01	DT4S1	TP421	Ant. Coupling
21	100	500		MO.5-31	1FM-31	1468-0001	5W5T1	MC235	RF Bypass Audio Grid
22	300	500		MO.5-33	1FM-33	1468-0003	5W5T3	MC241	IF Bypass Diode
23	100	500		MO.5-31	1FM-31	1468-0001	5W5T1	MC235	Osc. Grid Capacitor
24	300	500		MO.5-33	1FM-33	1468-0003	5W5T3	MC241	RF Coupling
25	5000								Fixed Padder Cer. *

*Not used in all models.

CONTROLS

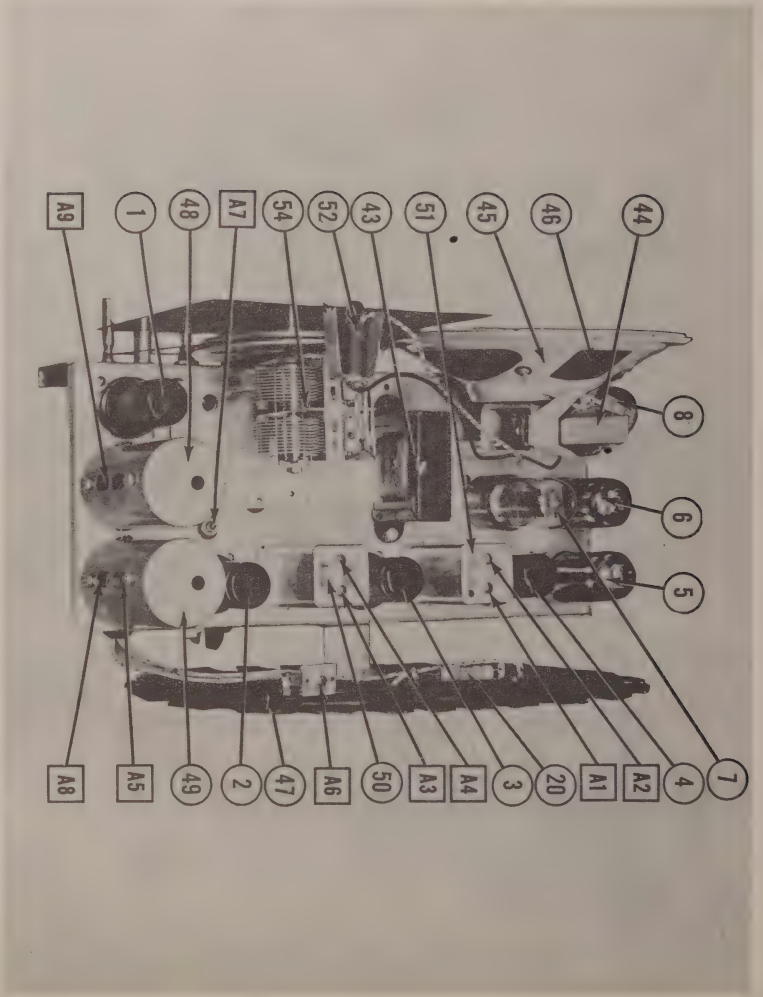
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MINERVA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
26A	500KΩ	1		MR48	D13-133	M-60-Z	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 26A per instructions
C	Switch			M26	41	SW-A	" " " "
27A	500KΩ	1		MR48	D13-133	M-60-Z	Tone Control
B	Shaft			Not Req.	A	Not Req.	Attach to 27A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MINERVA PART No.	IRC PART No.	IDENTIFICATION CODES
28	4700Ω	½		BTS-4700	Yl.-Vi.-Red RF Plate Load
29	47KΩ	½		BTS-47k	Yl.-Vi.-Or. Converter Grid
30	1500Ω	½		BTS-1500	Br.-Grn.-Red Converter Cathode-See Note 1
31	22KΩ	½		BTS-22K	Red-Blk.-Or. Oscillator Grid
32	330Ω	½		BW-½-330	Or.-Blk.-Br. IF Cathode
33	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
34	47KΩ	½		BTS-47k	Yl.-Vi.-Or. Series Volume Control
35	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
36	220KΩ	½		BTS-220K	Red-Red-Yl. 1st AF Plate Load
37	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
38	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
39	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Phase Inversion Net.
40	100KΩ	½		BTS-100K	Br.-Blk.-Yl. " " "
41	150Ω	1		BW-1-150	Br.-Grn.-Br. Output Cathode
42	150Ω	1		BW-1-150	Br.-Grn.-Br. " "

Note 1 - Not used in all models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000~)	REPLACEMENT DATA: MINERVA PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: THORDARSON PART NO.	INSTALLATION NOTES
43	.130 A.	125Ω	4 Henries		C-2303	T20S54†	†Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MINERVA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.		INSTALLATION NOTES
44	3500Ω CT	2.7Ω	150Ω CT	.6Ω		A-3823†	T22S47		†Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: MINERVA PART No.	REPLACEMENT DATA: JENSEN PART No.		INSTALLATION NOTES
45	FIELD PM	VC IMP. 2.7Ω		ST-10c Mod. P6-X		
46	CONE DIA. 6-1/16"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

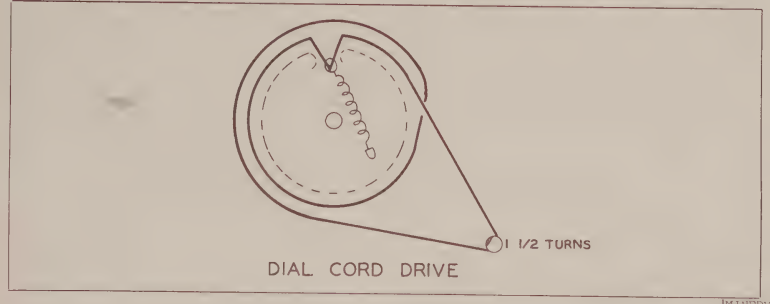
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MINERVA PART No.	REPLACEMENT DATA: MEISSNER PART No.	INSTALLATION NOTES
47	Loop Ant.	.5Ω	3.5Ω	5-34		
48	SW Ant. Coil	.5Ω	0Ω	5-33		
49A	BC Osc. Coil		5.5Ω	5-35		Items 49A & 49B in same shield
B	SW " "		0Ω			
50	Input IF	16Ω	18Ω	20-5	16-6662	
51	Output IF	14.5Ω	15Ω	20-6	16-6663	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MINERVA PART No.		INSTALLATION NOTES
52	Bayonet	6-8	0.15	brown			Type 47

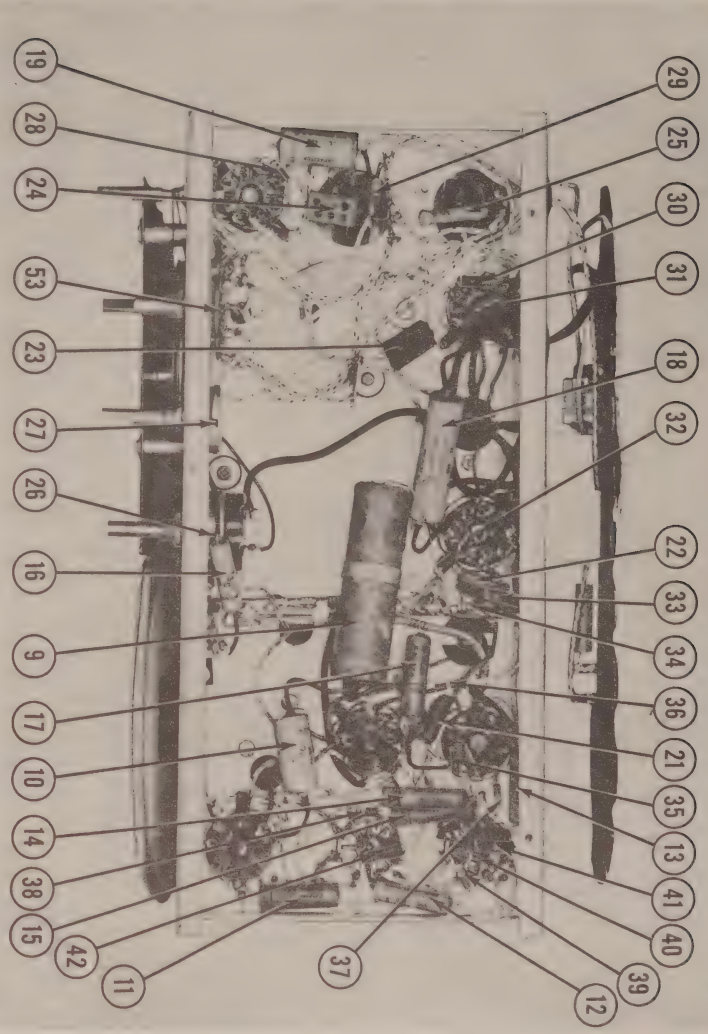
MISCELLANEOUS

ITEM No.	PART NAME	MINERVA PART No.	NOTES
53	Band Switch		
54	Tuning Cap.	25-12	2 Gang Var. Cap.

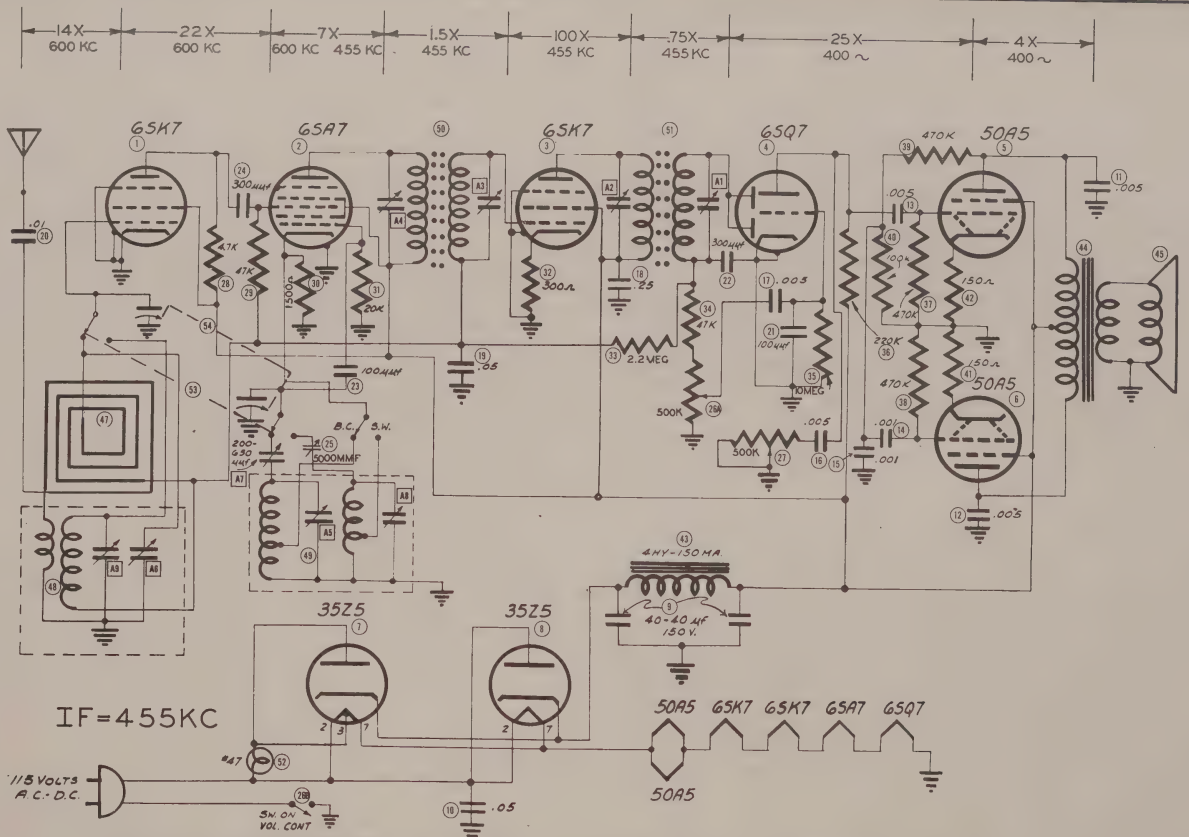


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



MINERVA MODEL M-117-3



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	21V.AC	0V.	0V.	0V.	107 V.DC	27 V.AC	40 V.DC
2	6SA7	0V.	7 V.AC	107 V.DC	107 V.DC	-4 V.DC	0V.	14 V.AC	0V.
3	6SK7	0V.	21V.AC	0V.	0V.	3.4 V.DC	107 V.DC	14 V.AC	107 V.DC
4	6SQ7	0V.	-5 V.DC	0V.	-6 V.DC	-6 V.DC	68 V.DC	7 V.AC	0V.
5	50A5	27 V.AC	103 V.DC	108 V.DC	18 V.DC	0V.	0V.	6.8 V.DC	82 V.AC
6	50A5	27 V.AC	105 V.DC	108 V.DC	103 V.DC	0V.	0V.	6.7 V.DC	82 V.AC
7	35Z5GT	0V.	117 V.AC	110 V.AC	107 V.DC	117 V.AC	107 V.DC	82 V.AC	126 V.DC
8	35Z5GT	105 V.DC	117 V.AC	113 V.AC	0V.	113 V.AC	0V.	82 V.AC	126 V.DC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	12Ω	0Ω	3 MEG.	0Ω	65KΩ	15Ω	70KΩ
2	6SA7	0Ω	4Ω	65KΩ	65KΩ	19KΩ	.5Ω	8Ω	3 MEG
3	6SK7	0Ω	12Ω	0Ω	3 MEG.	290Ω	65KΩ	8Ω	65KΩ
4	6SQ7	0Ω	8 MEG.	0Ω	530KΩ	530KΩ	285KΩ	4Ω	0Ω
5	50A5	15Ω	65KΩ	65KΩ	80KΩ	INF.	430KΩ	135Ω	37Ω
6	50A5	15Ω	65KΩ	65KΩ	65KΩ	INF.	420KΩ	135Ω	37Ω
7	35Z5GT	INF.	51Ω	51Ω	65KΩ	51Ω	65KΩ	37Ω	65KΩ
8	35Z5GT	65KΩ	51Ω	51Ω	INF.	51Ω	INF.	37Ω	65KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

471-14

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.-

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

MINERVA
MODELS L-728, W-728

MINERVA MODELS L-728, W-728

TRADE NAME	Minerva Models L-728, W-728
MANUFACTURER	Minerva Corp. of America, 238 William St., New York, N.Y.
TYPE SET	AC-DC Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE)	Types, 14Q7 Converter, 14A7 or 7B7 IF Amp., 14B6 Det.-AVC-AF, 50A5 Power Output, 35Z5GT Rectifier (Model L-728) - Types, 12SA7, 12SK7, 12SQ7, 50L6GT, 35Z5GT respectively (Model W-728).
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	540-1720KC RATING .257 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

Use isolation transformer if available. If not connect a capacitor in series with low side of signal generator and chassis. To set pointer turn variable fully closed and adjust pointer to 1st mark on left end of dial backplate. Volume control should be at maximum and output of signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator of front section of variable. Low side to chassis.	455KC	Variable fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
200 MMFD	High side to ext. ant. lead. Low side to chassis.	1500KC	Second mark from right end of dial backplate.	"	A5	Adjust for maximum output.
200 MMFD	"	"	Tune for maximum output.	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: MINERVA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1A	Converter	14Q7	14Q7	8AL	Lock-in
B	Converter	12SA7	12SA7	8R	Octal
2A	IF Amp.	14A7 or 7B7	14A7 or 7B7	8V	
B	IF Amp.	12SK7	12SK7	8N	
3A	Det.-AVC-AF	14B6	14B6	8W	
B	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4A	Power Output	50A5	50A5	6AA	
B	Power Output	50L6GT	50L6GT	7AC	
5A	Rectifier	35Y4	35Y4	5AL	
B	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MINERVA PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	30	150		DSB-2x30-150	TA-330	PRSA150-30-30	EZ3315	2N513	Filter
B	30	150							"
C	30	150		M-30-150	UT-301	PRS150-30	BR3015	TC47	"
7	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	Line Filter
8	.01	600		S-6-01	TC-11	684-01	DT6S1	TP410	Output Plate Bypass
9	.01	600		S-6-01	TC-11	684-01	DT6S1	TP410	Audio Coupling
10	.02	600		S-6-02	TC-12	684-02	DT6S2	TP412	" "
11	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	RF Bypass Pwr. Supp.
12	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	AVC Filter
13	250	500		MO.5-325	1FM-325	1468-00025	5W5T25	MC240	Tone Compensation
14	250	500		MO.5-325	1FM-325	1468-00025	5W5T25	MC240	IF Bypass Vol. Cont.
15	100	500		MO.5-31	1FM-31	1468-0001	5W5T1	MC235	Osc. Grid Capacitor

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MINERVA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
16A	500KΩ	1	34-1A	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 16A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

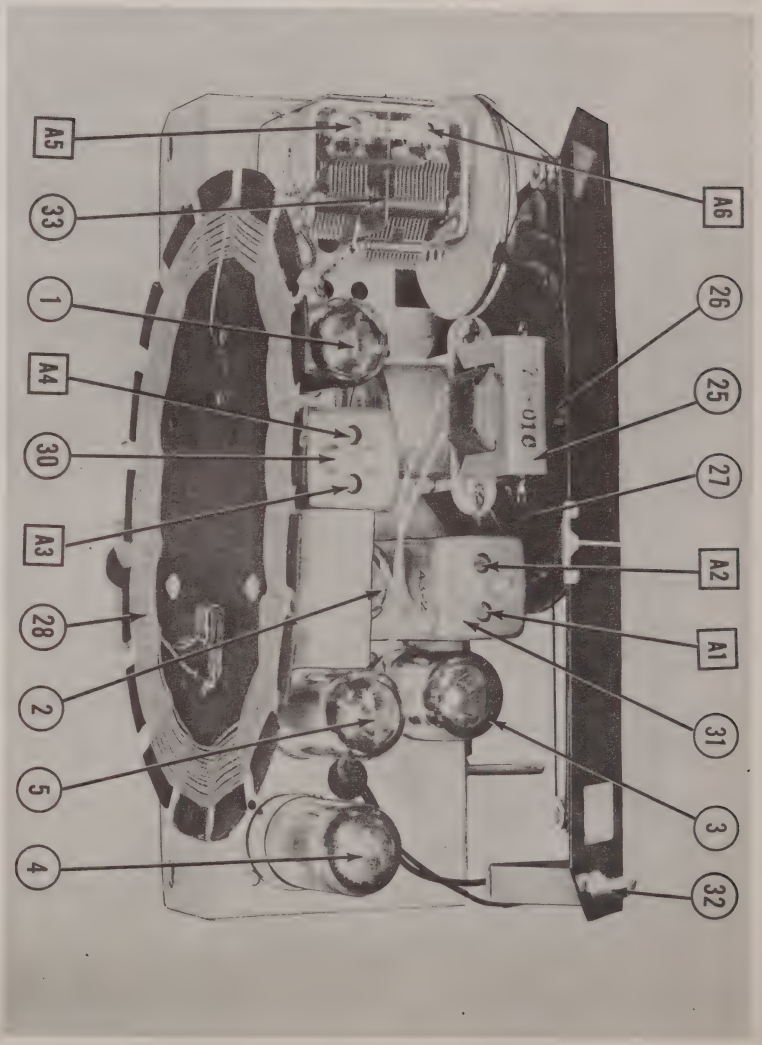
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MINERVA PART No.	IRC PART No.	IDENTIFICATION CODES
17	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
18	4.7 Meg.	½		BTS-4.7 Meg	Yl.-Vi.-Grn. AVC Network
19	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
20	270KΩ	½		BTS-270K	Red-Vi.-Yl. 1st AF Plate Load
21	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
22	130Ω	1		BW-1-130	Br.-Or.-Br. Output Cathode
23	330Ω	2		BW-2-330	Or.-Or.-Br. Filter
24	330Ω	½		BW-½-330	Or.-Or.-Br. "

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MINERVA PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
25	2000Ω	3.2Ω	180Ω	.5Ω		A-3876	T22S45		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: MINERVA PART No.	JENSEN PART No.		INSTALLATION NOTES
26	FIELD PM	VC IMP. 3.3Ω		ST-107* Mod. P5-V		*Fabricate new mounting bracket.
27	CONE DIA. 4-3/4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

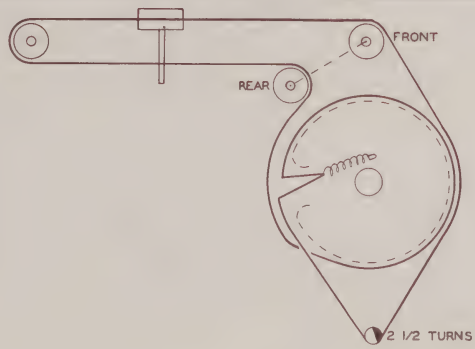
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MINERVA PART No.	MEISSNER PART No.	INSTALLATION NOTES
28	Loop Ant.		1.5Ω	5-45		
29	Osc. Coil	.7Ω	4.5Ω	5-44	14-1040	
30	Input IF	11.5Ω	11.5Ω	20-24	16-6658	
31	Output IF	11.5Ω	11Ω	20-25	16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MINERVA PART No.		INSTALLATION NOTES
32	Bayonet	6-8	0.15	Brown			Type 47

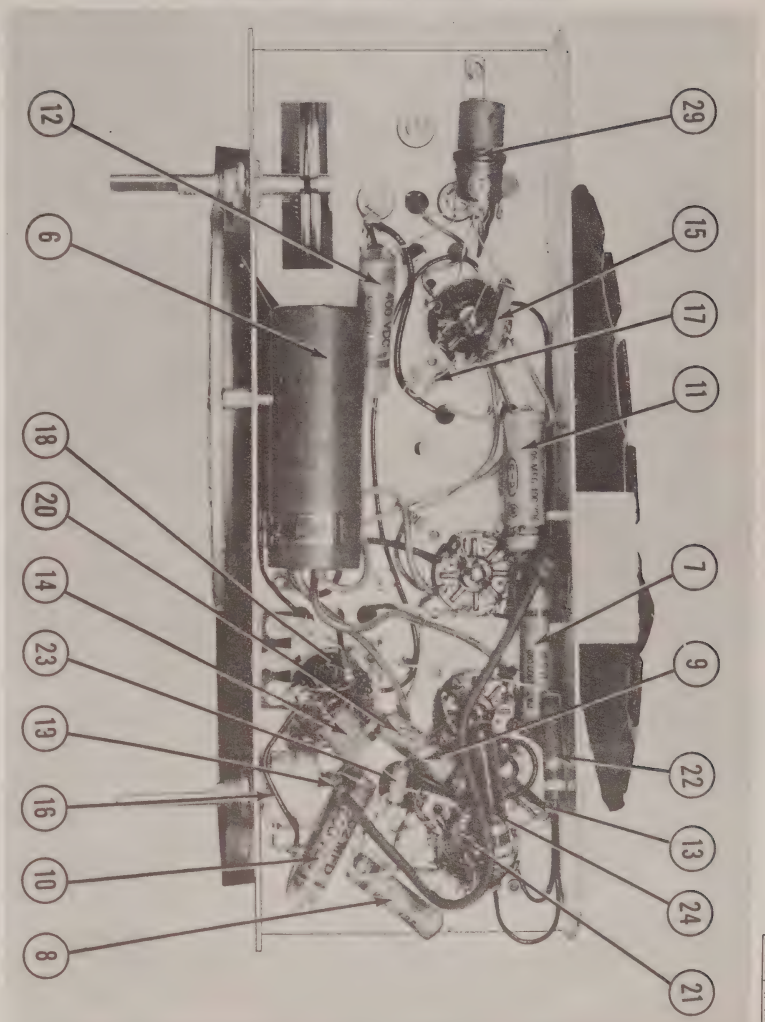
MISCELLANEOUS

ITEM No.	PART NAME	MINERVA PART No.	NOTES
33	Tuning Cap.	25-20	2 Gang Var. Cap.

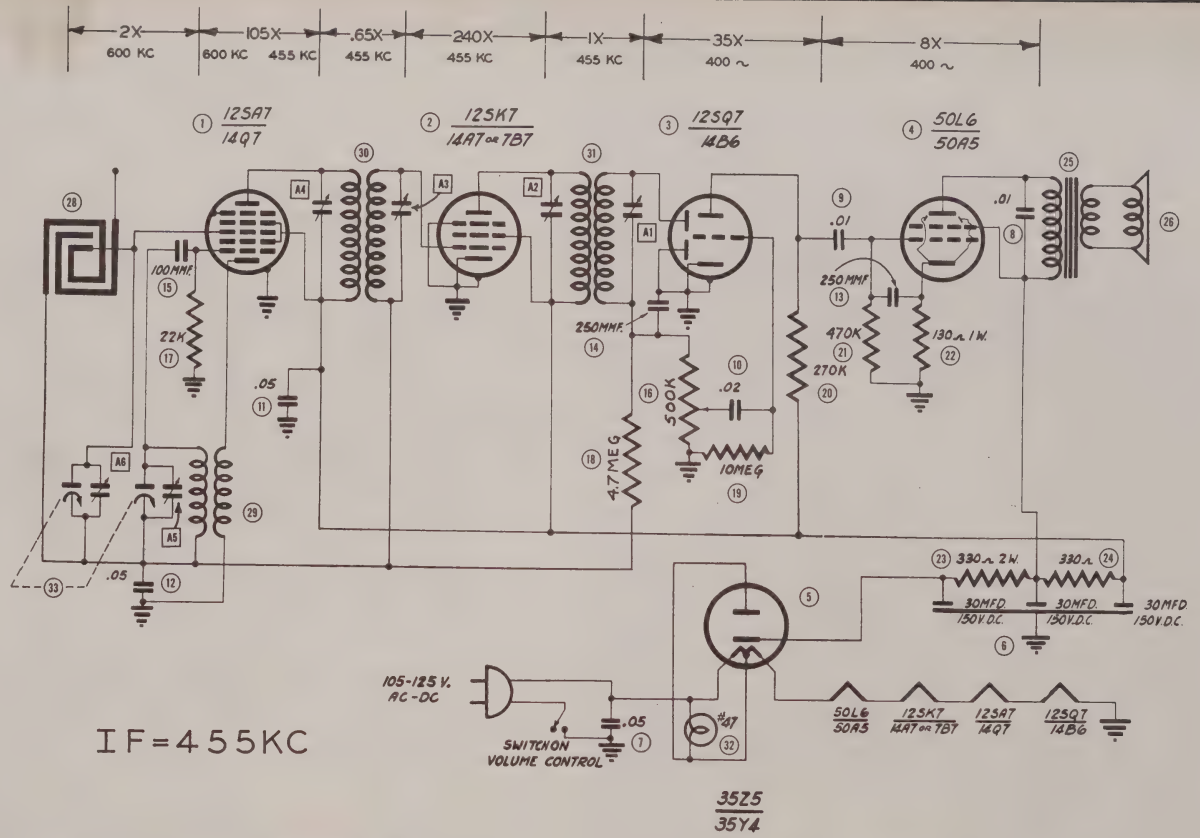


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



MINERVA MODEL L-728, W-728



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	22 V.AC	90 V.DC	90 V.DC	−6.1 V.DC	0 V.	−2 V.DC	0 V.	10 V.AC
2	14A7	34 V.AC	90 V.DC	90 V.DC	0 V.	0 V.	−2 V.DC	0 V.	22 V.AC
3	14B6	10 V.AC	62 V.DC	−.6 V.DC	0 V.	0 V.	−.6 V.DC	0 V.	0 V.
4	50A5	77 V.AC	92 V.DC	90 V.DC	98 V.DC	0 V.	0 V.	5 V.DC	34 V.AC
5	35Y4	117 V.AC	113 V.AC	90 V.DC	113 V.AC	0 V.	0 V.	117 V.DC	77 V.AC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

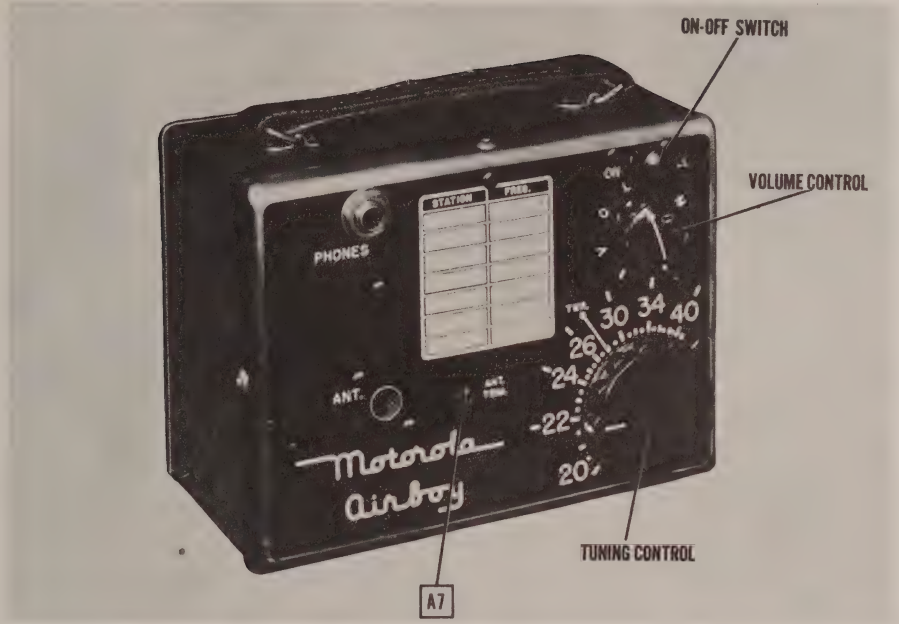
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	24Ω	50KΩ	50KΩ	19KΩ	0Ω	4.5MEG.	.5Ω	12Ω
2	14A7	34Ω	50KΩ	50KΩ	0Ω	0Ω	4.5MEG.	0Ω	24Ω
3	14B6	12Ω	320KΩ	7.5MEG.	0Ω	0Ω	500KΩ	0Ω	0Ω
4	50A5	75Ω	50KΩ	50KΩ	50KΩ	0Ω	500KΩ	115Ω	34Ω
5	35Y4	100Ω	96Ω	50KΩ	96Ω	INF	0Ω	50KΩ	75Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

471-15

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**



MOTOROLA MODEL AR-96-23

TRADE NAME	Motorola, Model AR-96-23 (Airboy)
MANUFACTURER	Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.
TYPE SET	Battery Operated Aircraft Superheterodyne Receiver
TUBES (FOUR)	Types, 1R5 Osc.-Mod., 1T4 IF Amp., 1S5 Det.-AVC-AF, 3S4 Power Output
POWER SUPPLY	1½ Volt Battery (2-Flashlight Cells) and 67½ Volt "B" Battery
RATING	250 MA. @ 1½ Volts DC and 8.5MA @ 67½ Volts DC (Eveready Battery No. 467 or equiv.)
TUNING RANGE—BROADCAST	200-410KC

ALIGNMENT INSTRUCTIONS

Set volume control at maximum volume and keep output of signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator rear section variable. Low side to chassis.	465KC	Variable fully open.	Paralleled with 600Ω across phone jack.	A1,A2, A3.	Adjust for maximum output.
200 MMF	High side to ext. ant. terminal. Low side to chassis.	200KC	200KC	"	A4.	" " " "
200 MMF.	High side to ext. ant. terminal. Low side to chassis.	220KC	220KC	"	A5.	" " " "
200 MMF.	"	400KC	400KC	"	A6	Rock variable and adjust for maximum output.
200 MMF	"	380KC	380KC	"	A7	Adjust for maximum output.
200 MMF	"	400KC	400KC	"	A6	Rock variable and adjust for maximum output.

FOR MAXIMUM ACCURACY REPEAT ABOVE STEPS.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1946 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc."

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Osc.-Modulator	1R5	1R5	7AT	
2	IF Amp.	1T4	1T4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3S4	3S4	7B6	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5	10	150	23A14727	M-10-150	UT-121	PRS150-12	BR1215	TC42	Pwr. Supp. Bypass
6	.005	100	8A24966	TTF-1-005			ZY2D6	MT115	Output Plate Bypass
7	.005	100	8A24966	TTF-1-005			ZY2D6	MT115	Audio Coupling
8	.005	100	8A24966	TTF-1-005			ZY2D6	MT115	" "
9	.02	100	8A25558	TTF-1-02			ZY1S2	MT127	IF Screen Bypass
10A	.02	100	8K25549	TTF-1-02			ZY1S2		Bypass Block
B	.05	100		TTF-1-05			ZY1S5		" "
C	.02	100		TTF-1-02			ZY1S2		" "
D	.02	100		TTF-1-02			ZY1S2		" "
11	.02	100	8A25558	TTF-1-02			ZY1S2	MT127	Ant. Coupling
12	100	300	21R6631	MMA-1-31					Audio Plate Bypass
13	100	300	21R6631	MMA-1-31					IF Bypass Diode
14	50	500	21K35392						Osc. Grid Capacitor Cer
15	20	500	21K31492						Fixed Trimmer Cer.
16	30	500	21K63815						" " Cer.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17	1 Meg.	1	18A24918				Volume Control

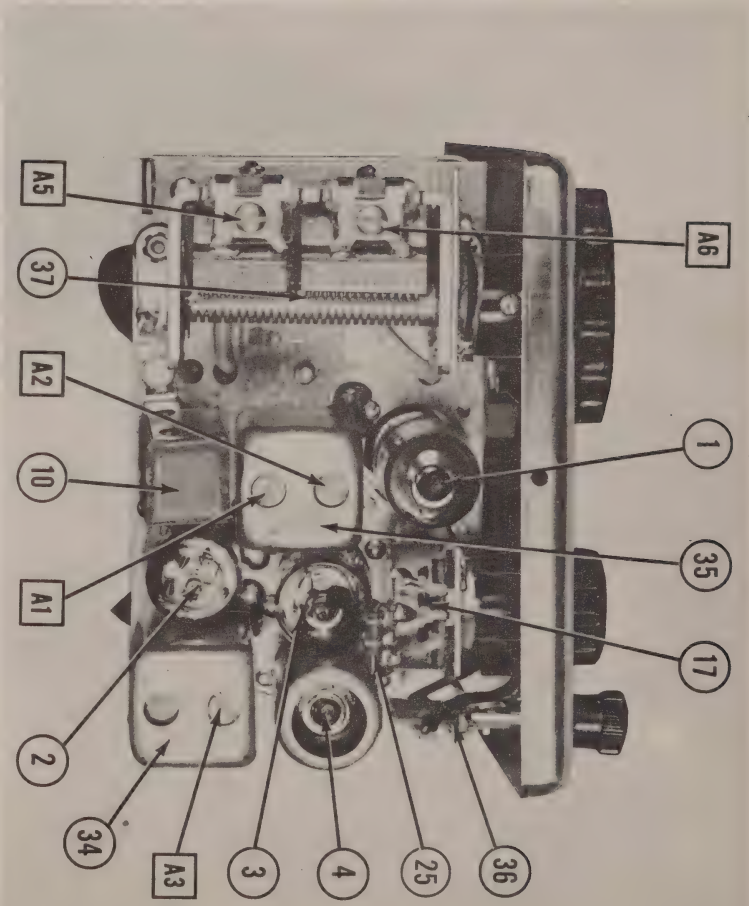
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES
18	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
19	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
20	100KΩ	½	6R6031	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
21	6800Ω	½	6R6428	BTS-6800	Blue-Gray-Red Voltage Dropping
22	3.3 Meg.	½	6R2118	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
23	2200Ω	½	6R6290	BTS-2200	Red-Red-Red IF Screen Dropping
24	4.7 Meg.	½	6R2122	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Screen Dropping
25	470KΩ	½	6R6032	BTS-470K	Yl.-Vi.-Yl. Volume Control Shunt
26	10 Meg.	½	6R2109	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
27	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. Diode Load
28	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Plate Load
29	3.3 Meg.	½	6R2118	BTS-3.3 Meg.	Or.-Or.-Grn. Output Grid
30	820Ω	½	6R6059	BTS-820	Gray-Red-Br. Bias

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	STANCOR PART No.	THORDARSON PART No.		INSTALLATION NOTES
31	7500Ω	600Ω	720Ω	60Ω	25A51574	A-3578*	T22S46*		*Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA MOTOROLA PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
32	Ant. Coil		35Ω	24A51564		
33	Osc. Coil	6Ω	25Ω	24A51566		
34	Input IF	13.5Ω	13.5Ω	1X24889		
35	Output IF	17Ω	12.5Ω	1X24886		

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
36	On-Off Switch	40A54549	DPST
37	2 Gang Var. Cap.	19K54349	Osc. & Ant. Trimmer Included
A4	Trimmer	20A51567	Osc. Padder (Nom. 100 MMF)
A7	"	20K51566	Ant. Loading (300-800 MMF)
	Phone Jack	9K54609	Open Circuit Type
	Switch Knob	36A54540	
	Tuning Knob	36A51604	
	Volume Knob	36A51605	
	Headphones	50C54616	HS-23

REMOVING CHASSIS FROM HOUSING

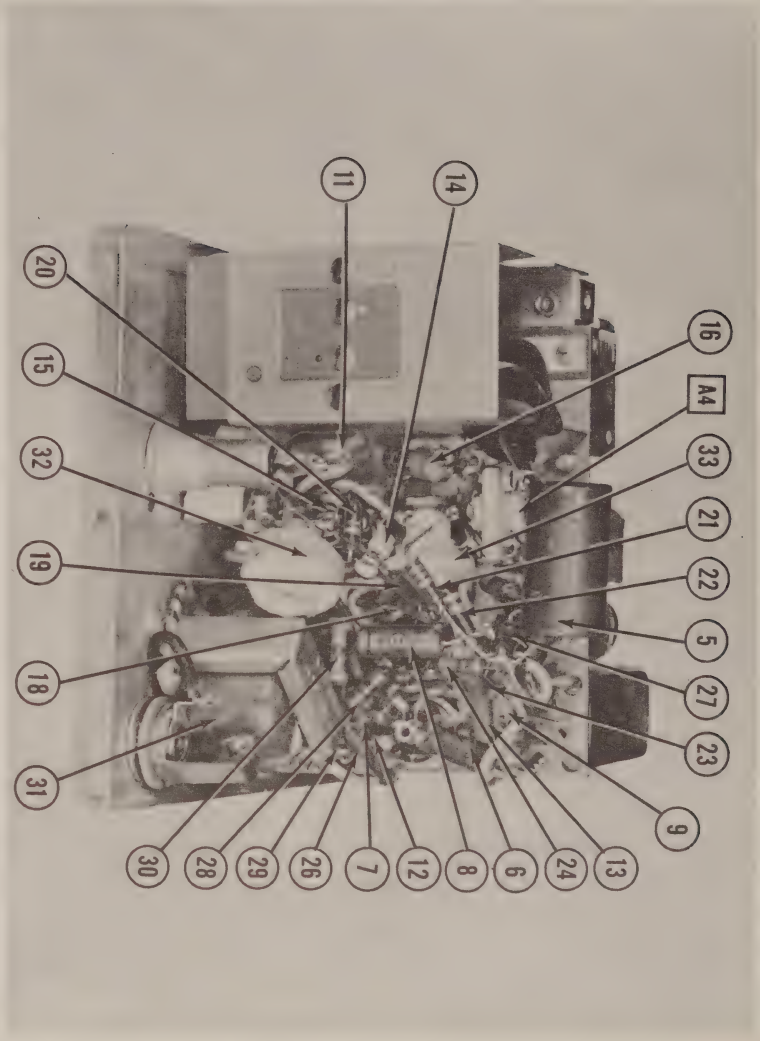
1. Unlatch back cover and remove.
2. Remove "A" AND "B" batteries.
3. Remove the three Phillips head screws which fastens the front panel.
4. Remove chassis locking screw.
5. The front panel and chassis may now be removed from the wrap-around housing.

NOTE:
(a) When replacing chassis be sure to place the tube retainer and cardboard packing if removed.
(b) Do not remove tape from housing, as it serves as insulation.

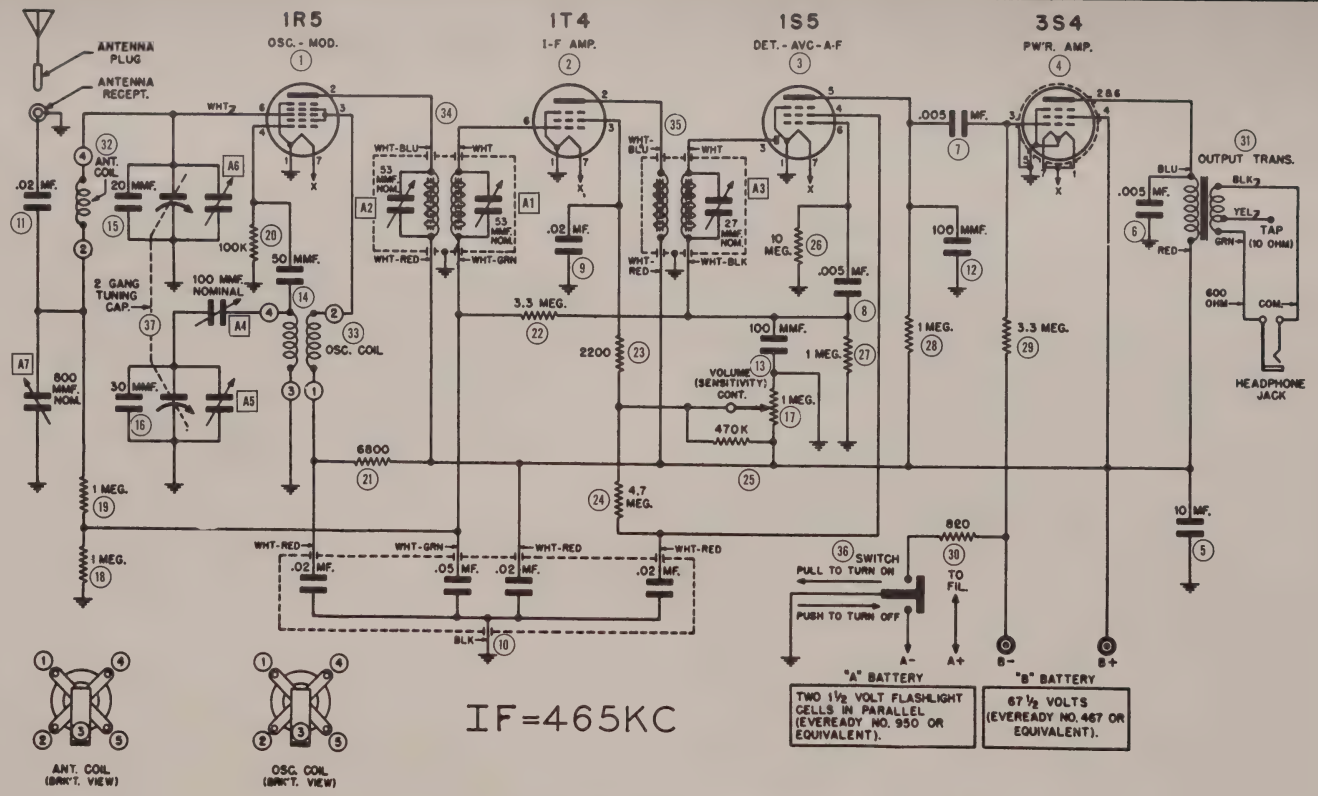
REMOVING CHASSIS FROM FRONT PANEL

1. Remove tuning and volume control knobs; don't lose the two cork washers and spring washer under tuning knob. When replacing, the spring washer is between the cork washers.
2. Remove knob from ON-OFF switch. This knob is threaded. Remove by turning to the left.
3. Remove the following wires:
   a. The red and blue leads of the output transformer from the 3S4 tube socket.
   b. The three leads to the ON-OFF switch.

CHASSIS—BOTTOM VIEW



MOTOROLA MODEL AR-96-23



*NOTE: DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0V.	60V.DC	45V.DC	-4.3V.DC	0V.	0V.	1.5V.DC
2	1T4	0V.	60V.DC	56V.DC	-.5V.DC	0V.	0V.	1.5V.DC
3	1S5	0V.	0V.	-.5V.DC	10.5V.DC	14.5V.DC	0V.	1.5V.DC
4	3S4	1.5V.DC	56V.DC	-9V.DC	60V.DC	0V.	56V.DC	1.5V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	*	650KΩ	650KΩ	87KΩ	*	1.4MEG.	*
2	1T4	*	650KΩ	650KΩ	790KΩ	*	680KΩ	*
3	1S5	*	680KΩ	800KΩ	4 MEG.	1.65MEG.	10 MEG.	*
4	3S4	*	650KΩ	2.9MEG.	650KΩ	*	650KΩ	*

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

471-16

At the request of the manufacturer stage gain values are not included.

1. DC Voltage measurements are at 20,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

OLYMPIC
MODEL 6-606-A

OLYMPIC
MODEL 6-606-A

OLYMPIC MODEL 6-606-A

TRADE NAME	Olympic, Model 6-606-A
MANUFACTURER	Olympic Radio & Television Corp., 3101-19 38th Ave., Long Island City, N.Y.
TYPE SET	Three Power Portable Superheterodyne Receiver - Self Contained Loop Antenna
TUBES (SIX)	Types, 1LN5 RF Amp., 1LA6 Converter, 1LN5 IF Amp., 1LH4 Det.-AVC-AF, 3Q5GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC or DC or 9 Volts "A" Battery and 90 Volts "B" Battery (2-4½ V. "A" Batt.-Eveready #746 or Equiv. and 2-45 V. "B" Batt.-Eveready #482 or Equiv.)
RATING	.255 Amp. @ 117 Volts AC or 52 MA @ 9 Volts DC and 12 MA @ 90 Volts
TUNING RANGE—BROADCAST	530-1700KC

ALIGNMENT INSTRUCTIONS

To set pointer, turn variable fully closed and set pointer at the last reference mark at the left end of the dial. Use battery power for alignment whenever possible. If a-c power is used, use isolation transformer if available. If not, connect capacitor in series with the low side of the signal generator and chassis. Set volume control at maximum volume and keep input from from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator of front section of variable. Low side of chassis.	455KC	High freq. end.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If a-c power is used without an isolation transformer, reduce dummy to 200 MMF. to reduce hum modulation.
500 MMF	High side to ant. terminal. Low side to ext. ground terminal.	1500KC	1500KC	"	A5	Adjust for maximum output.
50 MMF.	"	1500KC	Tune for maximum output.	"	A6,A7.	" " " "
50 MMF.	"	600KC	"	"	A8	Rock variable and adjust for maximum output. Recheck A5, A6, and A7 at 1500KC.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	1LN5	1LN5	7AO	
2	Converter	1LA6	1LA6	7AK	
3	IF Amp.	1LN5	1LN5	7AO	
4	Det.-AVC-AF	1LH4	1LH4	5AG	
5	Power Output	3Q5GT	3Q5GT	7AP	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: OLYMPIC PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	80	150	CO-162	DSB-8040-150	EL-351		E5321506†	2N511†	Filter - Blue
B	20	150						TC44	" - Red
C	100	15		DuM-100-15	UT-201		BRH151	TC2501	Fil. Bypass-Yellow
8	50	25	CO-808	M-50-25	TA-50	PRS25-50	BR502	TC29	Filament Bypass
9	.1	200	RCP10W2104AS-4-1		TC-1	484-.1	DT4P1	TP428	Pwr. Supp. Bypass
10	.05	400	RCP10W4503AS-4-05		TC-15	484-05	DT4S5	TP426	Line Filter
11	.005	600	RCP10W5502AS-6-005		TC-25	684-005	DT6D5	TP408	Output Plate Bypass
12	.01	600	RCP10W6103AS-6-01		TC-11	684-01	DT6S1	TP410	Audio Coupling
13	.005	600	RCP10W5502AS-6-005		TC-25	684-005	DT6D5	TP408	" "
14	.05	400	RCP10W4503AS-4-05		TC-15	484-05	DT4S5	TP426	Filament Bypass
15	.01	600	RCP10W6103AS-6-01		TC-11	684-01	DT6S1	TP410	Conv. Screen Bypass
16	.01	600	RCP10W6103AS-6-01		TC-11	684-01	DT6S1	TP410	AVC Filter
17	.05	400	RCP10W4503AS-4-05		TC-15	484-05	DT4S5	TP426	Filament Bypass
18	.01	600	RCP10W6103AS-6-01		TC-11	684-01	DT6S1	TP410	AVC Filter
19	.01	600	RCP10W6103AS-6-01		TC-11	684-01	DT6S1	TP410	Ext. Ground Isolation
20	100	500	RCM20A101M	MO.5-31	1FM-31	1468-0001	SWBT1	MC235	Audio Grid Bypass
21	47	500	RCM20A470M	MO.5-45	1FM-45	1468-00005	SW5Q5	MC225	Osc. Grid Capacitor
22	10	500	RCM20A100M	MO.5-41	1FM-41	1468-00001	SW5Q1	MC215	Fixed Trimmer *

*Not used in all models.
†Parallel section to obtain desired capacity.

CONTROLS

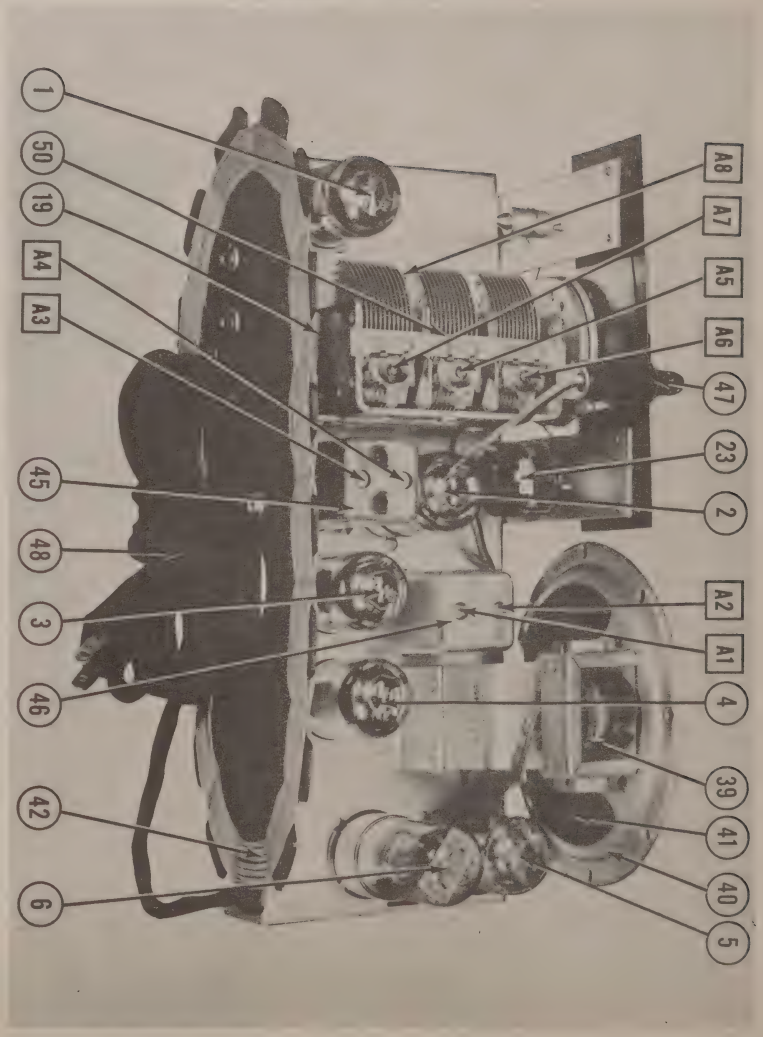
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23A	1 Meg.	1	PT-578	MK402	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSE-3	Attach to 23A per instructions
C	Switch		" "	M27 "	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	IRC PART No.	IDENTIFICATION CODES
24	1 Meg.	½	REB105M	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
25	2.2 Meg.	½	REB225M	BTS-2.2 Meg.	Red-Red-Grn. " "
26	3.3 Meg.	½	REB335M	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
27	680Ω	½	REB681M	BTS-680	Blue-Gray-Br. Filament String
28	220KΩ	½	REB224M	BTS-220K	Red-Red-Yl. Oscillator Grid
29	33KΩ	½	REB333M	BTS-33K	Or.-Or.-Or. Converter Screen Dropping
30	1000Ω	½	REB102M	BTS-1000	Br.-Blk.-Red Filament String
31	6.8 Meg.	½	REB685M	BTS-6.8 Meg.	Blue-Gray-Grn. 1st AF Grid
32	1 Meg.	½	REB105M	BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Plate Load
33	2.2 Meg.	½	REB225M	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
34	1500Ω	½	REB152M	BTS-1500	Br.-Grn.-Red Filament String
35	2600Ω	10	RE-407	ABA-3000	Filament String-See Note 1
36	27Ω	½	REB270K	BW-½-27	Red-Vi.-Blk. Surge Limiter
37	2200Ω	2		BT-2-2200	Red-Red-Red Filter
38	100Ω	2	RED101M	BW-2-100	Br.-Blk.-Br. Pilot Light Shunt

Note 1 - On IRC Replacement Set Slider at 2600Ω from one end.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		OLYMPIC PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
39	7000Ω	3.5Ω	400Ω	.5Ω	Part of SK-476	A-3876	T22547		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			OLYMPIC PART No.	JENSEN PART No.		
40	FIELD PM VOICE COIL	VC IMP. 3.5Ω VC DIA.	SK-476	ST-106* Mod. P8-W		*Fabricate new mounting bracket.
41	4-0 3/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

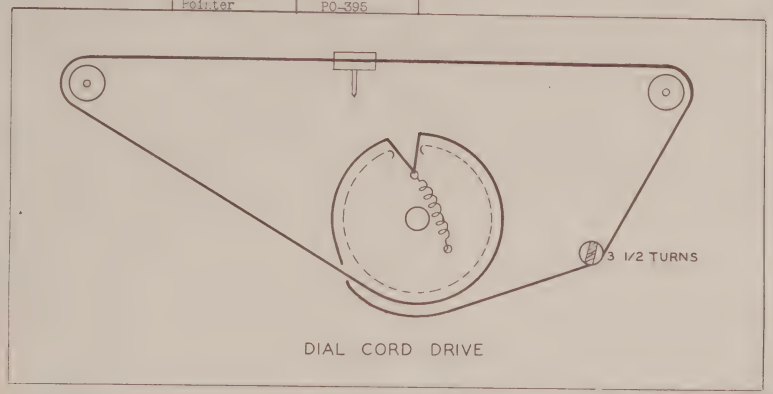
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	OLYMPIC PART No.	MEISSNER PART No.	
42	Loop Ant.	0Ω	1.5Ω	LP176		
43	RF Coil	100Ω	4.5Ω	OL830		
44	Osc. Coil	4Ω	8.0Ω	OL177		
45	Input IF	20.5Ω	20.5Ω	TR707	16-6666	
46	Output IF	16.5Ω		TR708	16-6670	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					OLYMPIC PART No.		
47	Bayonet	6-8	0.18	Brown	BU-187		Type 47

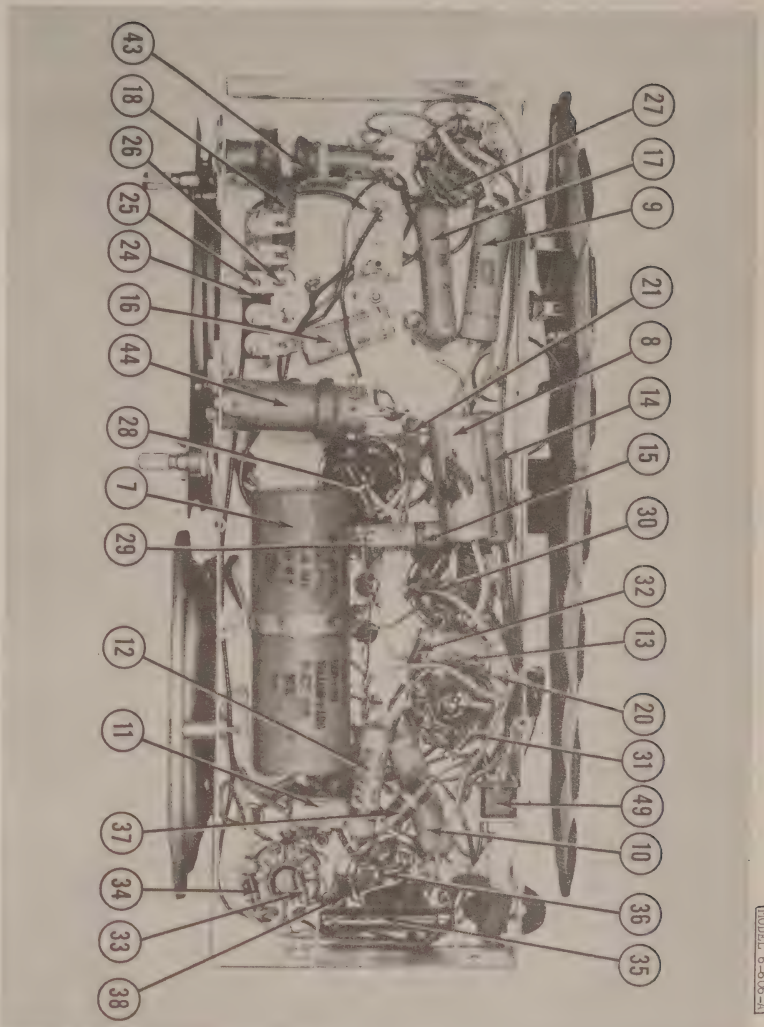
MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
48	Line Cord	LC-315	5402
49	Change-Over Sw.	SW-185	DPDT
50	3 Gang Var. Cap.	CV-146	Includes Osc., RF, Ant. Trimmers
A8	Trimmer Cap.	CT-388	(220-680 MMF) Osc. Padder
	Dial Scale	DL-391	
	Pointer	PO-395	



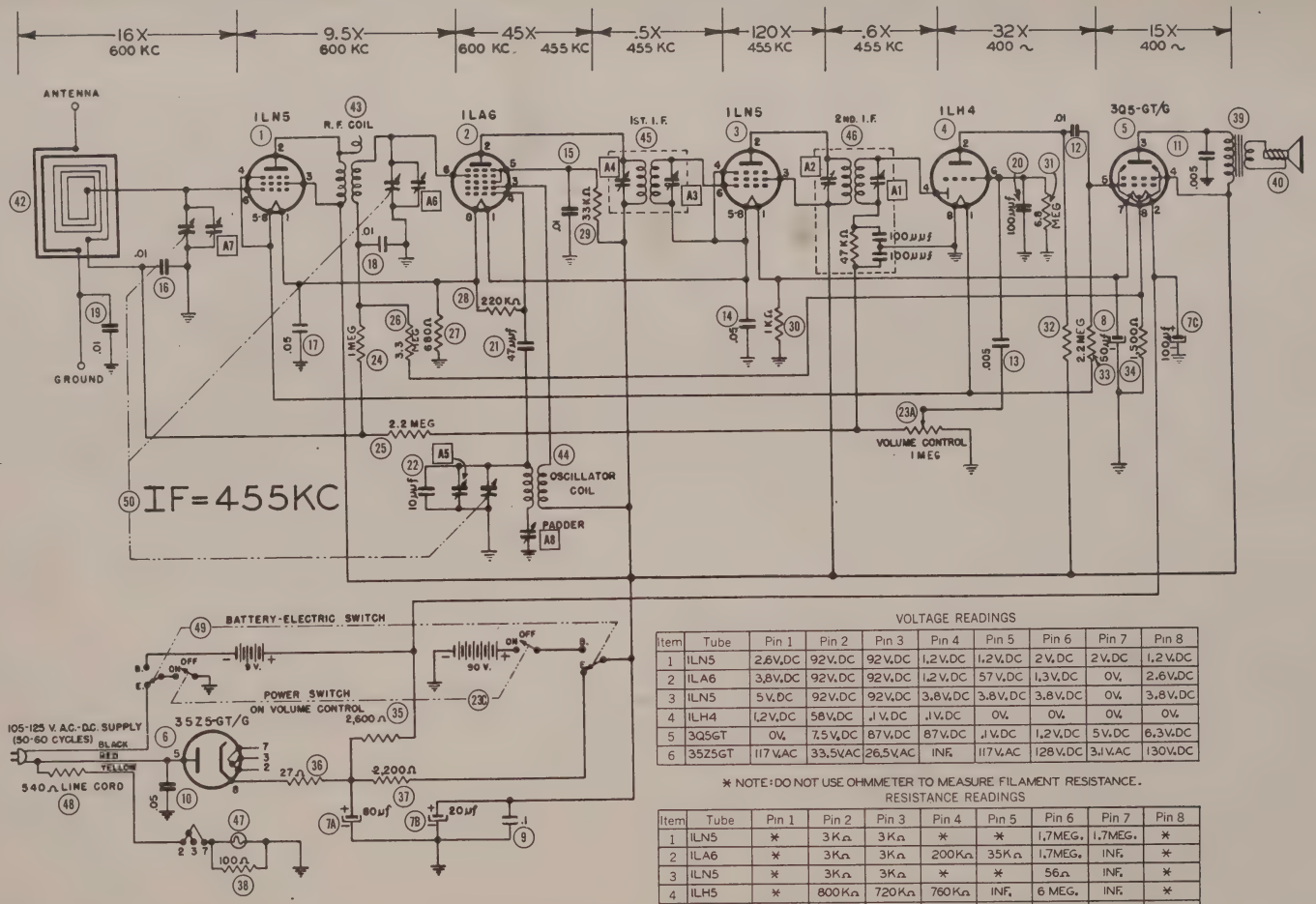
DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



OLYMPIC MODEL 6-606-A

OLYMPIC MODEL 6-606-A



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LN5	2.6V.DC	92V.DC	92V.DC	1.2V.DC	1.2V.DC	2V.DC	2V.DC	1.2V.DC
2	1LA6	3.8V.DC	92V.DC	92V.DC	1.2V.DC	57V.DC	1.3V.DC	0V.	2.6V.DC
3	1LN5	5V.DC	92V.DC	92V.DC	3.8V.DC	3.8V.DC	3.8V.DC	0V.	3.8V.DC
4	1LH4	1.2V.DC	58V.DC	.1V.DC	.1V.DC	0V.	0V.	0V.	0V.
5	3Q5GT	0V.	7.5V.DC	87V.DC	87V.DC	.1V.DC	1.2V.DC	5V.DC	6.3V.DC
6	35Z5GT	117V.AC	33.5VAC	26.5V.AC	INF.	117V.AC	128V.DC	3.1V.AC	130V.DC

* NOTE: DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LN5	*	3KΩ	3KΩ	*	*	1.7MEG.	1.7MEG.	*
2	1LA6	*	3KΩ	3KΩ	200KΩ	35KΩ	1.7MEG.	INF.	*
3	1LN5	*	3KΩ	3KΩ	*	*	56Ω	INF.	*
4	1LH5	*	800KΩ	720KΩ	760KΩ	INF.	6 MEG.	INF.	*
5	3Q5GT	INF.	*	3KΩ	3KΩ	2.1MEG.	*	*	*
6	35Z5GT	540Ω	34Ω	28Ω	INF.	540Ω	2.4KΩ	9Ω	2.4KΩ

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurment operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to ground.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

OLYMPIC
MODEL 6-606-U

OLYMPIC
MODEL 6-606-U

OLYMPIC MODEL 6-606-U

TRADE NAME	Olympic, Model 6-606-U
MANUFACTURER	Olympic Radio & Television Corp., 3101-19 38th Ave., Long Island City, N.Y.
TYPE SET	Three Power Portable Superheterodyne Receiver
TUBES (SIX)	Types, 1LN5 RF Amp., 1LA6 Converter, 1LN5 IF Amp., 1LH4 Det.-AVC-AF, 1LB4 Power Output, 117Z6GT Rectifier.
POWER SUPPLY	105-125 Volts AC - DC or 9 Volt "A" Batt. (2-4½ Volt "A" Batt.-Eveready #746 or equiv.) and 90 Volt "B" Batt. (2-45 Volt "B" Batt.-Eveready #482 or equiv.)
TUNING RANGE—BROADCAST	530-1700KC RATING .185 Amp. @ 117V AC or 50MA @ 9.1V DC & 14.1MA @ 83V DC

ALIGNMENT INSTRUCTIONS

To set pointer, turn variable fully closed and set pointer at the last reference mark at the left end of the dial. Use battery power for alignment whenever possible. If a-c power is used, use isolation transformer if available. If not, connect capacitor in series with the low side of the signal generator and chassis. Set volume control at maximum volume and keep input from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator of front section of variable. Low side to chassis.	455KC	High freq. end	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If a-c power is used without an isolation transformer, reduce dummy to 200 MMF. to reduce hum modulation.
50 MMF.	High side to ant. terminal. Low side to ext. ground terminal.	1500KC	1500KC	"	A5	Adjust for maximum output.
50 MMF.	"	"	Tune for maximum output.	"	A6,A7.	" " " "
50 MMF.	"	600KC	"	"	A8	Rock variable and adjust for maximum output. Recheck A5, A6 and A7 at 1500KC.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	1LN5	1LN5	7AO	
2	Converter	1LA6	1LA6	7AK	
3	IF Amp.	1LN5	1LN5	7AO	
4	Det.-AVC-AF	1LH4	1LH4	5AG	
5	Power Output	1LB4	1LB4	5AD	
6	Rectifier	117Z6GT	117Z6GT	7Q	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: OLYMPIC PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	60	150	C01b2	DSB-8040-150	EL-351		CE5321501		Filter - Blue
B	20	150							" - Red
C	100	15		DGM-100-15	UT-201		BRH151		Fil. Bypass - Yellow
8	.05	400	RCP10W4503AS-4-05		TC-15	484-05	DT4S5	TP426	Line Filter
9	.1	200	RCP10W2104AS-4-1		TC-1	484-.1	DT4P1	TP428	Pwr. Supp. Bypass
10	.002	600	RCP10W6202MS-6-002		TC-22	684-002	DT6D2	TP405	Output Plate Bypass
11	.01	600	RCP10W6103AS-6-01		TC-11	684-01	DT6S1	TP410	Audio Coupling
12	.005	600	RCP10W6502AS-6-005		TC-25	684-005	DT6D5	TP405	" "
13	.01	600	RCP10W6103AS-6-01		TC-11	684-01	DT6S1	TP410	Conv. Screen Bypass
14	.1	400	RCP10W4104LS-4-1		TC-1	484-.1	DT4P1	TP428	Filament Bypass
15	.02	200	RCP10W2203AS-4-02		TC-12	484-02	DT4S2	TP423	AVC Filter
16	.25	200	RCP10W2254AS-4-25		TC-2	484-.25	DT4P25	TP430	Filament Bypass
17	.01	600	RCP10W6103AS-6-01		TC-11	684-01	DT6S1	TP410	AVC Filter
18	.1	400	RCP10W4104LS-4-1		TC-1	484-.1	DT4P1	TP428	Filament Bypass
19	.01	600	RCP10W6103AS-6-01		TC-11	684-01	DT6S1	TP410	Ext. Gnd. Isolation
20	47	500	RCM20A470M	MO.5-45	1FM-45	1468-00005	SW5Q5	MC225	Audio Grid Bypass
21	47	500	RCM20A470M	MO.5-45	1FM-45	1468-00005	SW5Q5	MC225	IF Bypass Diode
22	47	500	RCM20A470M	MO.5-45	1FM-45	1468-00005	SW5Q5	MC225	Osc. Grid Capacitor
23	10	500	RCM20A100M	MO.5-41	1FM-41	1438-00001	SW5Q1	MC215	Fixed Trimmer *

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
24A	1 Meg.	1	PT-576	MK402	D13-137	AM-68-Z	Volume Control - See Note 1
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 24A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "
24A	2 Meg.	1	PT-383	MK403	D13-139	AM-68-Z	Volume Control-See Note 2
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 24A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "

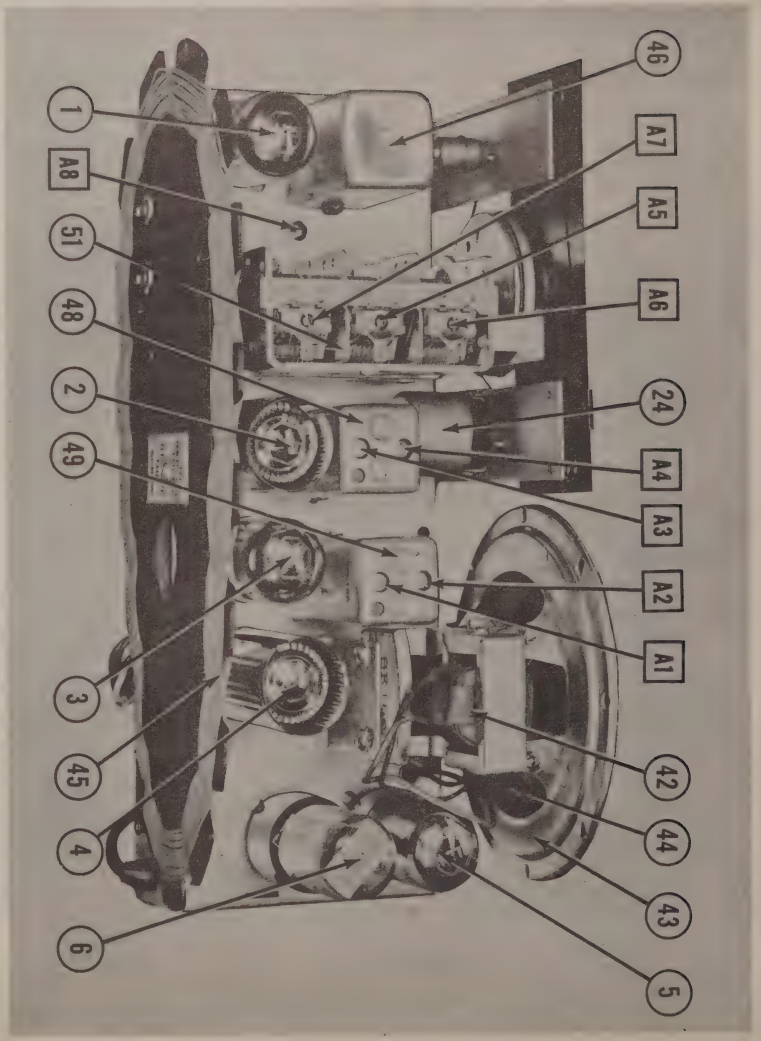
Note 1 - Used in later production.

Note 2 - Used in early production.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	IRC PART No.	IDENTIFICATION CODES
25	1 Meg.	½	REB105M	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
26	3.3 Meg.	½	REB335M	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
27	2.2 Meg.	½	REB225M	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
28	220KΩ	½	REB224M	BTS-220K	Red-Red-Yl. Oscillator Grid
29	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Oscillator Screen Dropping
30	1500Ω	½	REB152M	BTS-1500	Br.-Grn.-Red Filament String
31	27Ω	½	REB270K	BW-½-27	Red-Vi.-Blk. " "
32	470KΩ	½	REB474M	BTS-470K	Yl.-Vi.-Yl. Diode RF Filter
33	470Ω	½	REB471M	BTS-470	Yl.-Vi.-Br. Filament String
34	6.8 Meg.	½	REB685M	BTS-6.8 Meg.	Blue-Gray-Grn. 1st AF Grid
35	470KΩ	½	REB474M	BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	OLYMPIC PART No.	IRC PART No.	
36	1 Meg.	½	REB105.	BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
37	1500Ω	½	REb152M	BTS-1500	Br.-Grn.-Red Filament String
38	2600Ω	10	RE-407	ADA-3000	" " " -See Note 3
39	3300Ω	1	REC332K	BTA-3300	Or.-Or.-Red Filter
40	27Ω	½	REb270K	BW-½-27	Red-Vl.-Blk. Surge Limiter
41	220KΩ	½	REb224M	BTS-220K	Red-Red-Yl. Line Isolation

Note 3 - Set slider at 2600Ω from one end when using IRC replacement.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		OLYMPIC PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
42	7000Ω	3.5Ω	460Ω	.5Ω	Part of SK-476	A-3878	T22547		

SPEAKER

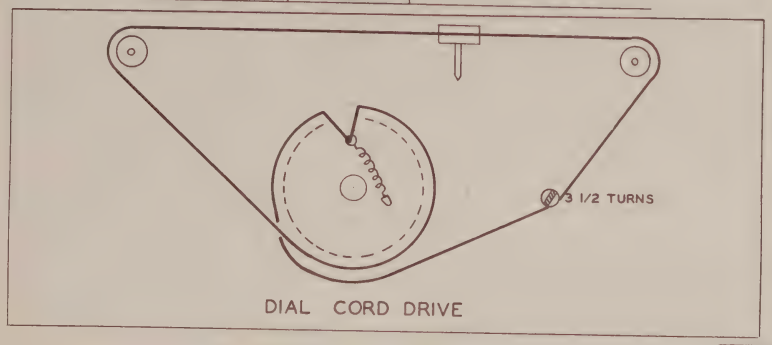
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			OLYMPIC PART No.	JENSEN PART No.		
43	FIELD	VC IMP.	SK-476	ST-106*		*Fabricate new mounting bracket.
	PM	3.5Ω		Mod. P6-W		
44	CONE DIA.	VC DIA.	NOT READILY	REPLACEABLE-USE COMPLETE SPEAKER UNIT.		
	4-5/8"	1/2"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	OLYMPIC PART No.	MEISSNER PART No.	
45	Loop Ant.	0Ω	1.5Ω	LP176		
46	RF Coil	105Ω	3.3Ω	CL176		
47	Osc. Coil	4Ω	5.8Ω	CL177	14-1040	
48	Input IF	11.5Ω	11.5Ω	TR186	16-6666	
49	Output IF	11.5Ω	14Ω	TR186	16-6667	

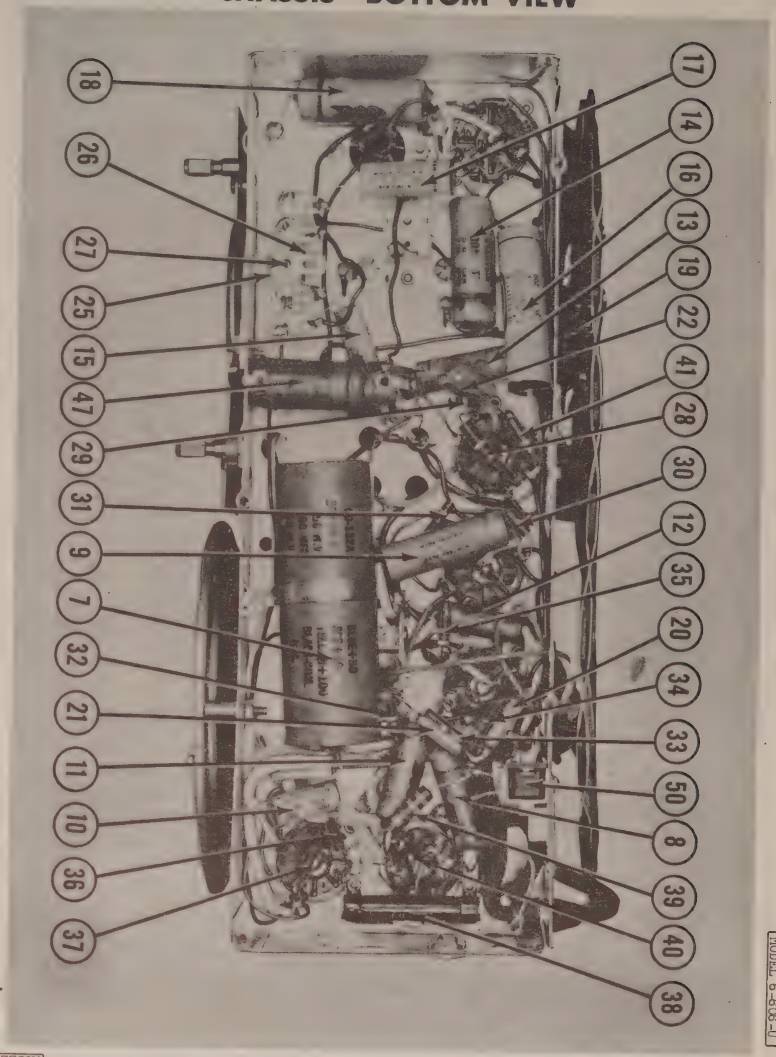
MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
50	AC-DC Batt. Sw.	SW-193	TPDT (Slide Type)
51	3 Gang Var. Cap.	CV-146	Osc., RF, & Ant. Trimmers Incl.
A8	Trimmer	CT-388	Osc. Padder (220-680 MMF)
	Dial Glass	CR-299	
	Dial Scale	DL-391	
	Pointer	PO-395	

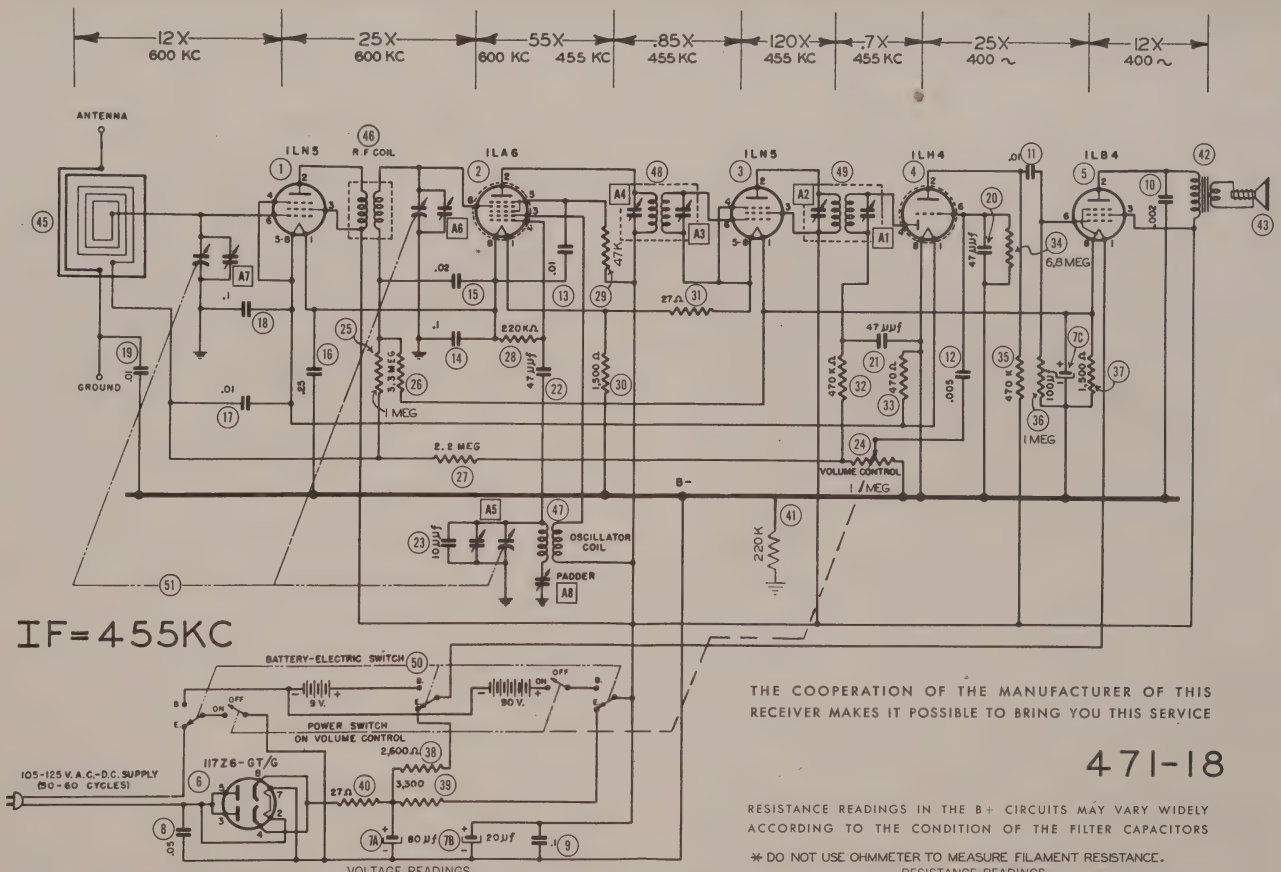


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



OLYMPIC MODEL 6-606-U



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RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LN5	3 V.DC	87 V.DC	87 V.DC	1.5 V.DC	1.5 V.DC	.3 V.DC	.3 V.DC	1.5 V.DC
2	1LA6	4.4 V.DC	87 V.DC	87 V.DC	1.4 V.DC	50 V.DC	.4 V.DC	0V.	3 V.DC
3	1LN5	6.9 V.DC	87 V.DC	87 V.DC	5.6 V.DC	5.6 V.DC	5.7 V.DC	0V.	5.6 V.DC
4	1LH4	1.5 V.DC	63 V.DC	.1 V.DC	0V.	0V.	0V.	0V.	0V.
5	1LB4	8.2 V.DC	86 V.DC	87 V.DC	0V.	0V.	0V.	0V.	6.9 V.DC
6	117Z6GT	0V.	117 V.AC	117 V.AC	137 V.DC	117 V.AC	135 V.DC	0V.	137 V.DC

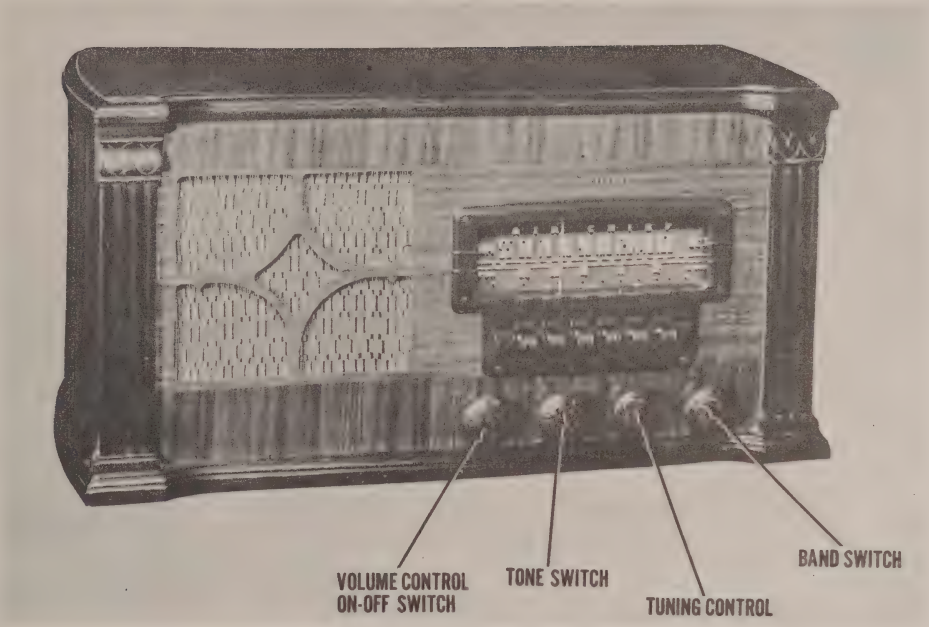
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LN5	*	2.2KΩ	2.2KΩ	*	*	1.6 MEG.	1.6 MEG.	*
2	1LA6	*	2.2KΩ	2.2KΩ	200KΩ	52KΩ	15KΩ	0Ω	*
3	1LN5	*	2.2KΩ	2.2KΩ	*	*	60Ω	0Ω	*
4	1LH4	*	500KΩ	790KΩ	1.3 MEG.	0Ω	6 MEG.	*	*
5	1LB4	*	2.2KΩ	2.2KΩ	0Ω	INF.	1 MEG.	INF.	*
6	117Z6GT	INF.	220Ω	220Ω	2.2KΩ	220Ω	2.2KΩ	0Ω	2.2KΩ

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting to chassis.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AIR CHIEF
MODELS 4-A-21, 4-A-22



AIR CHIEF
MODELS 4-A-21, 4-A-22

AIR CHIEF MODEL 4-A-21

TRADE NAME	Air Chief, Models 4-A-21, (Code No. 5-5-9001A), 4-A-22 (Code No. 5-5-9001B).
SUPPLIER	The Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, Ohio
TYPE SET	AC Operated 2 Band Superheterodyne Receiver - Self Contained Loop Antenna
TUBES (SIX)	Types, 6SK7 RF Amp., 6SA7 1st Det.-Osc., 6SF7 IF-2nd Det.-AVC, 6SK7 1st AF, 6K6GT Power Output, 5Y3GT Rectifier
POWER SUPPLY	117 Volts AC — RATING .485 Amps. @ 117V AC
TUNING RANGE—BROADCAST	540-1780KC — SHORT WAVE 8.9 - 12.8MC

ALIGNMENT INSTRUCTIONS

To set pointer, turn variable fully closed and set pointer at the last reference mark at the left end of the dial. To insure proper tracking keep receiver and loop in the same relative position as they are when mounted in cabinet. Set volume control at maximum volume and keep output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator of rear section of variable. Low side to chassis.	455KC	BC (Clockwise)	Any point of non-interfering signal.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
500 MMF.	Ext. Ant. Clip on loop.	1500KC	"	1500KC	"	A5	" " " "
500 MMF.	"	"	"	Tune for maximum output.	"	A6	" " " "
500 MMF.	"	"	"	"	"	A7	" " " "
500 MMF.	"	600KC	"	"	"	A8	Rock variable and adjust for maximum output. Repeat adjustments of A5, A6,and A7.
400Ω carbon resistor	"	12.0MC	SW (Counterclockwise)	12.0MC	"	A9	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 11.1 MC. If image does not appear, realign at 12.0MC by opening A9 to next peak. Recheck image.
"	"	"	"	Tune for maximum output.	"	A10	Rock variable and adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: AIR CHIEF PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	1st Det.-Osc.	6SA7	6SA7	8R	
3	IF-2nd Det.-AVC	6SF7	6SF7	7AZ	
4	1st AF	6SK7	6SK7	8N	
5	Power Output	6K6GT	6K6GT	7S	
6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR CHIEF PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	20	400	502207	FP339	DY-313	EL-312	AF-44J	UP6CJ13	■ Filter
B	10	400					"		▲ "
C	20	25					PRS25-25		"
8	.05	600	502154	TP415	S-6-05	TC-15	684-05	DT6S5	Tone Compensation
9	.004	600	502150	TP404	S-6-004	TC-24	684-004	DT6D4	6K6 Plate Bypass
10	.02	400	502152	TP423	S-4-02	TC-12	484-02	DT4S2	Audio Coupling
11	.1	400	502410	TP428	S-4-1	TC-1	484-.1	DT4P1	Audio Plate Decoup.
12	.25	400	502405	TP430	S-4-25	TC-2	484-.25	DT4P25	Feedback
13	.004	600	502150	TP404	S-6-004	TC-24	684-004	DT6D4	Audio Coupling
14	.05	400	502157	TP426	S-4-05	TC-15	484-05	DT4S5	IF Screen Bypass
15	.01	400	502151	TP421	S-4-01	TC-11	484-05	DT4S5	Osc. Feedback
16	.1	200	502155	TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
17	.05	400	502157	TP426	S-4-05	TC-15	484-05	DT4S5	RF Screen Bypass
18	.05	400	502157	TP426	S-4-05	TC-15	484-05	DT4S5	RF Bypass Pwr. Supp.
19	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
20	110	500	502160	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Audio Plate Bypass
21	260	500	502271	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	IF Bypass Diode
22	130	500	502201						Fixed Padder Cer.
23	39	500	502132						Fixed Trimmer "
24	50	500	502159	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Capacitor
25	2	500	502411						Neutralizing Cer.
26	10	500	502295						RF Pri. Shunt Cer.
27	270	500	502161	MCB240	MOS.5-325	1FM-325	1469-00025	5R5T25	Fixed Tuning Osc. PB
28	1000	500	502165	MC255	MO.3-21	1FM-21	1467-001	1W5D1	Screen Bypass PB
29	150	500	502202						Fixed Padder Cer.

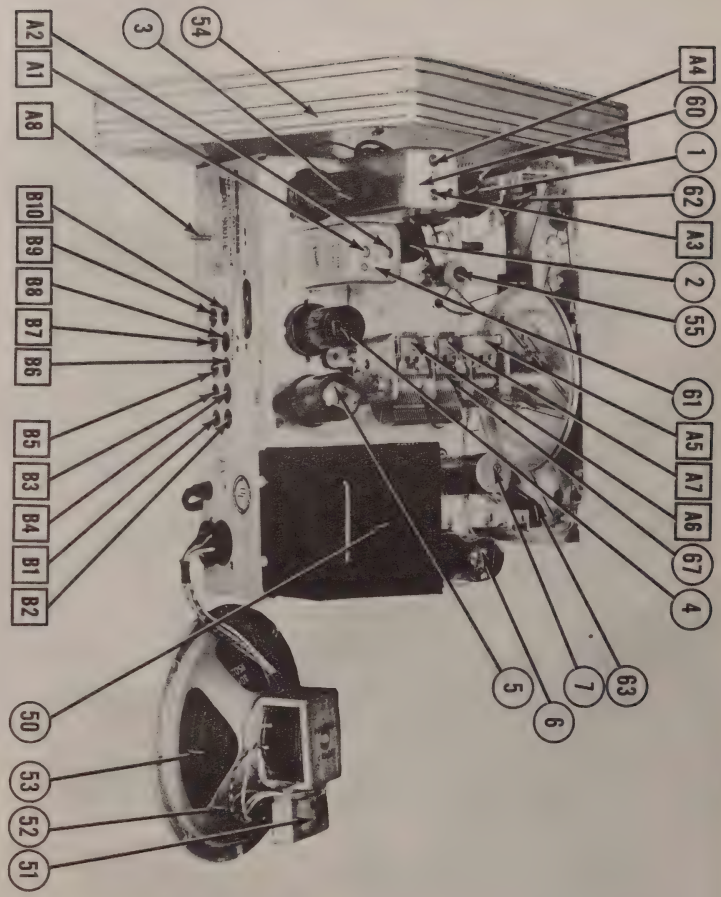
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR CHIEF PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
30A	500KΩ	1	502148	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 30A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR CHIEF PART No.	IRC PART No.	IDENTIFICATION CODES
31	4.7 Meg.	½	502468	BTS-4.7 Meg.	Yl.-Vi.-Grn. RF Grid
32	220Ω	½	502127	BW-½-220	Red-Red-Br. RF Cathode
33	100KΩ	½	502132	BTS-100K	Br.-Blk.-Yl. RF Screen Dropping
34	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. AVC Network
35	22KΩ	½	502130	BTS-22K	Red-Red-Or. Osc. Grid

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIR CHIEF PART No.	IRC PART No.	
36	33KΩ	1	502466	BTA-33K	Or.-Or.-Or. Conv. Screen Dropping
37	2.2 Meg.	½	502135	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
38	47Ω	½	502264	BW-½-47	Yl.-Vi.-Br. 1st IF Cathode
39	68KΩ	½	502467	BTS-68K	Blue-Gray-Or. 1st IF Screen Dropping
40	47KΩ	½	502131	BTS-47K	Yl.-Vi.-Or. IF Filter
41	4.7 Meg.	½	502468	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
42	2200Ω	½	502128	BTS-2200	Red-Red-Red 1st AF Cathode
43	220KΩ	½	502133	BTS-220K	Red-Red-Yl. 1st AF Plate Load
44	100KΩ	½	502132	BTS-100K	Br.-Blk.-Yl. 1st AF Plate Filter
45	2.2 Meg.	½	502135	BTS-2.2 Meg.	Red-Red-Grn. 1st AF Screen Dropping
46	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. Output Grid
47	4700Ω	½	502291	BTS-4700	Yl.-Vi.-Red Tone Compensation
48	560Ω	½	502127	BW-2-560	Grn.-Blue-Br. Tone Compensation
49	330Ω	2	502137	BW-2-330	Or.-Or.-Br. Output Bias

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	SEC. 3	AIR CHIEF PART No.	STANCOR PART No.	THORDARSON PART No.	
50	117V. @ .485A	600V CT @ .058A	5V @ 1.82A	6.2V @ 2.02A	502174	P-6120*	T-13S20*	*Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIR CHIEF PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
51A	7370Ω	3.2Ω	630Ω	.66Ω	504122	A-3378!	T-225471		!Solder to bracket same as the original.
B					504061				Used with speaker M-502168
C					502170				" " " R-502168

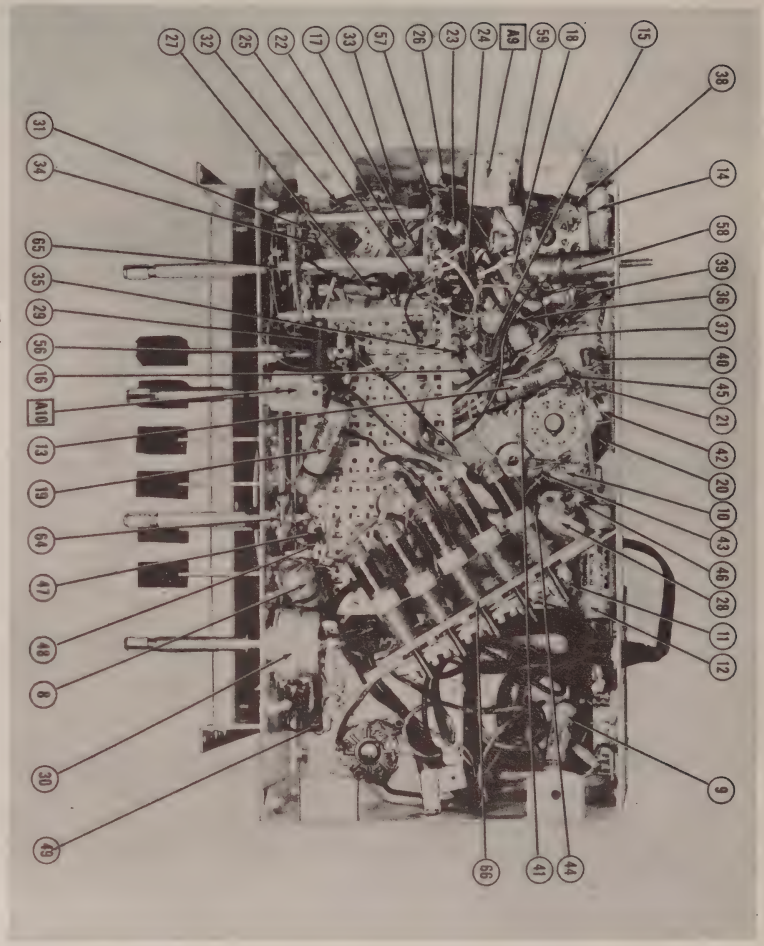
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIR CHIEF PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-431		
52A	1000Ω	3.2Ω	D-502168	Mod. H-6S		Used with Output Transformer 504122
B	Speaker		M-502168			" " " " 504061
C	Speaker		R-502168			" " " " 502170
	CONE DIA.	VC DIA.				
53A	6-3/16"	1/2"	504123			
B	Cone		504062			Used with Speaker M-502168
C	Cone		502169			" " " R-502168

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	AIR CHIEF PART No.	MEISSNER PART No.	
54	Loop	0Ω	0Ω	502247		
55	BC Ant. Coil	.5Ω	3Ω	502112		
56	SW Ant. Coil	.5Ω	0Ω	502110		
57	BC RF Coil	11Ω	0Ω	502113		
58	BC Osc. Coil		5Ω	502114		
59	SW Osc. Coil		.2Ω	502111		
60	Input IF	20Ω	20Ω	502102	16-6658	
61	Output IF	19Ω	19Ω	502103	16-6660	

CHASSIS—BOTTOM VIEW



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	6.2V.AC	0V.	0V.	1.4V.DC	58V.DC	0V.	238V.DC
2	6SA7	0V.	6.2V.AC	238V.DC	70V.DC	-3V.DC	0V.	0V.	-2V.DC
3	6SF7	0V.	-2V.DC	.5V.DC	72V.DC	0V.	238V.DC	0V.	6.2V.DC
4	6SK7	0V.	6.2V.DC	0V.	0V.	1.35V.DC	20V.DC	0V.	83V.DC
5	6K6GT	0V.	6.2V.DC	223V.DC	238V.DC	-2.1V.DC	-19V.DC	0V.	0V.
6	5Y3GT	0V.	305V.DC	0V.	310V.AC	0V.	310V.AC	0V.	305V.DC

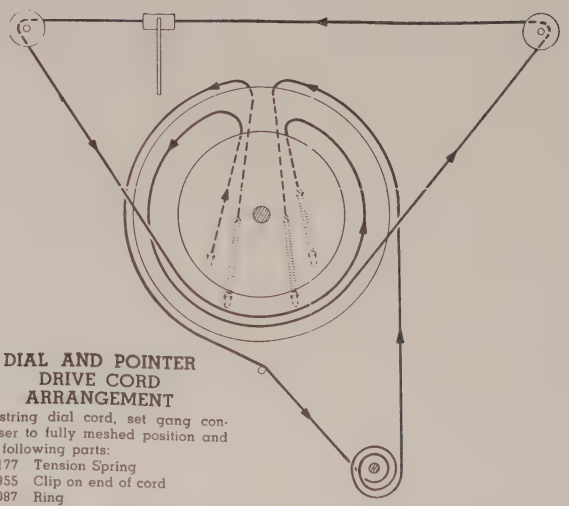
NOTE: VOLTAGE AND RESISTANCE READINGS TAKEN IN "STANDARD BROADCAST POSITION."

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	.1Ω	0Ω	1.9MEG.	185Ω	295KΩ	0Ω	195KΩ
2	6SA7	0Ω	.1Ω	195KΩ	228KΩ	18KΩ	.5Ω	0Ω	1.8MEG.
3	6SF7	0Ω	1.8MEG.	44Ω	260KΩ	360KΩ	195KΩ	0Ω	.1Ω
4	6SK7	0Ω	.1Ω	0Ω	4MEG.	2.2KΩ	2.4MEG.	0Ω	515KΩ
5	6K6GT	INF.	.1Ω	195KΩ	195KΩ	480KΩ	300Ω	0Ω	0Ω
6	5Y3GT	INF.	195KΩ	INF.	450Ω	INF.	460Ω	INF.	195KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connection are shown as bottom view.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage measure
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



DIAL AND POINTER DRIVE CORD ARRANGEMENT

To string dial cord, set gang condenser to fully meshed position and use following parts:

113177 Tension Spring
114955 Clip on end of cord
119087 Ring
117057 Cord (61 inches)
34 inches for pointer drive
27 inches for tuning drive

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					AIR CHIEF PART No.		
62	Bayonet	6-8	0.25	Blue	110629		Type 44
63	Bayonet	6-8	0.25	Blue	110629		Type 44

MISCELLANEOUS

ITEM No.	PART NAME	AIR CHIEF PART No.	NOTES
64	Tone Switch	502146	
65	Band Switch	502147	
66	PB Assembly	502025	Complete Coil & Trimmer Assby. For Automatic Tuning.
67	Tuning Cap.	502122	3 Gang Variable Cap.
	PB Switch	502177	
A9	Trimmer Cap.	502171	SW Osc. Adj. 5-35 MMFD.
A10	" "	502172	SW Ant. Adj. 25-100 MMFD.
	Coil	502907	PB Tuning (540-1000KC)
	"	502908	" " (650-1300KC)
	"	502909	" " (975-1600KC)

PUSH BUTTON ADJUSTMENTS

The five push buttons from left to right (facing front of receiver) cover the following frequencies in order:

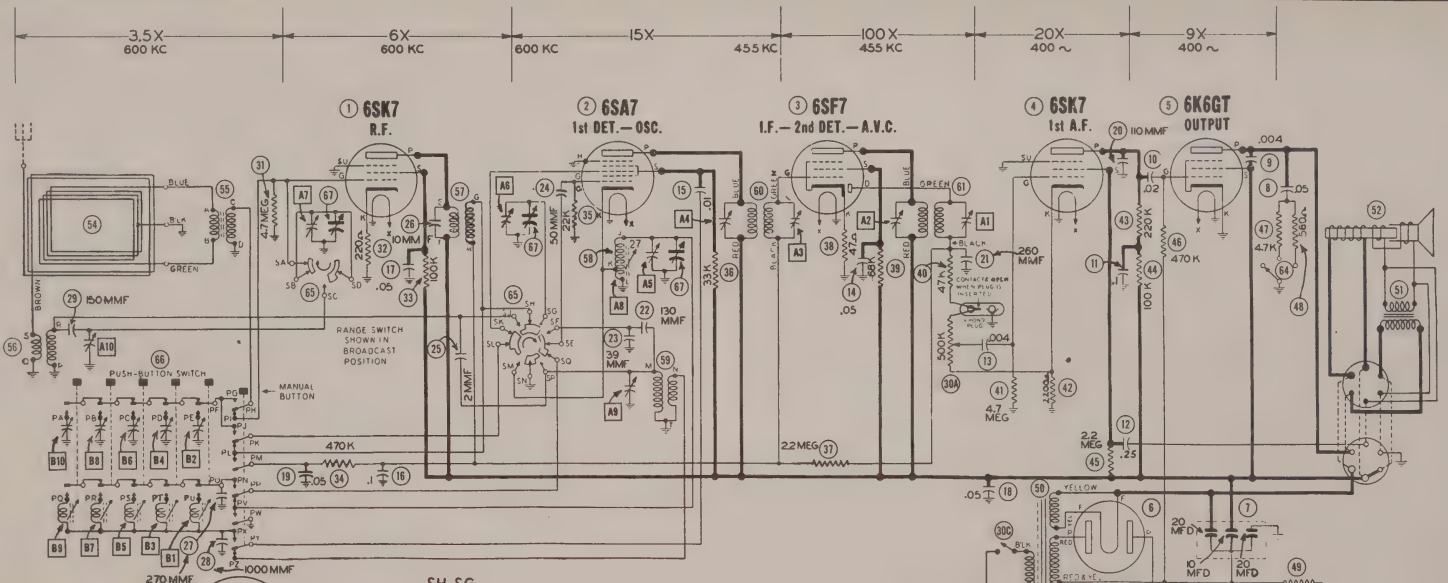
540 to 1000KC, 650 to 1300KC, 650 to 1300KC, 975 to 1600KC, 975 to 1600KC.

To set the individual push buttons on the desired stations proceed as follows:

1. Select a station within the frequency range of B1 and B2 (540 to 1000KC) and tune in the station using manual tuning.
2. Press in push button corresponding to B1 and B2 which is the one on the left (facing front of receiver).
3. Adjust B1 to tune in the desired station, Turning the adjustment counter-clockwise increases the frequency.
4. Adjust B2 for maximum volume of the selected station.
5. Proceed in the same order in setting the remaining push buttons. Always select a station within the frequency range of the corresponding push button adjustments. B3, B5, B7 and B9 are adjusted to tune in station. B4, B6, B8 and B10 are adjusted for maximum volume of selected station.

DISASSEMBLY INSTRUCTIONS

1. Remove the four push-on type control knobs and felt washers.
2. Remove eight Phillips head screws from cabinet back cover. Remove cover.
3. Disconnect blue and green leads from loop antenna.
4. Remove Phillips head screw holding brown antenna lead to loop antenna. Remove lead.
5. Remove push-on type brown lead clip from loop antenna.
6. Remove three Phillips head wood screws holding loop antenna to cabinet. Remove loop ant.
7. Remove four hex nuts and washers holding speaker to cabinet.
8. Disconnect speaker plug from chassis by removing set screw.
9. Remove speaker from cabinet.
10. Remove four hex head machine screws and washers holding chassis to cabinet. Remove chassis.



Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.

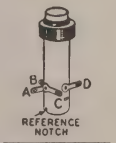
FRONT SECTION
REAR VIEW

REAR SECTION
REAR VIEW

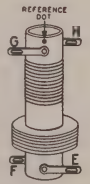
I.F. 455 KC.

BAND SWITCH
502147

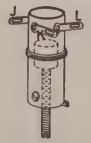
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE



BC. ANTENNA COUPLING COIL 502112

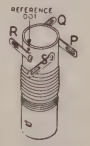


R.F. COIL
502113

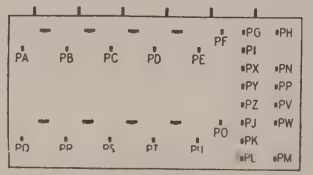


BC. OSCILLATOR COIL
502114

S.W. OSCILLATOR COIL
502111



S.W. ANTENNA COIL
502110

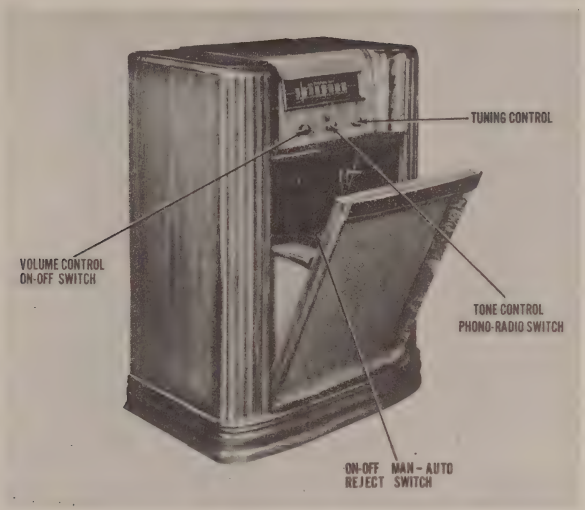


PUSH-BUTTON SWITCH
502177

471-19

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such, as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. The following precautions should be observed in making stage gain measurements for this set.

1 - Use the 600KC signal with 400-cycle modulation connected as shown. (Use near-by frequency if local station interferes.)
2 - For RF and IF measurements connect negative terminal of 3-volt battery to AVC lead and positive terminal to B-. IMPORTANT - Disconnect battery when measuring audio stage gains.
3 - Be sure receiver is carefully tuned to generator signal. (Use weak signal for sharp tuning.)



AIR CHIEF
MODEL 4-A-31

AIR CHIEF MODEL 4-A-31

TRADE NAME	Air Chief, Model 4-A-31 (Code No. 177-5-4A31)
SUPPLIER	The Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, Ohio
TYPE SET	AC Operated Automatic Phonograph - Radio Combination - Self Contained Loop Antenna
TUBES (SIX)	Types, 6SK7GT RF Amp., 6SA7GT Converter, 6SK7GT,IF Amp., 6SQ7GT Det.-AVC-AF, 6V6GT Power Output, 6X5GT Rectifier.
POWER SUPPLY	117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC RATING .430 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS

To set pointer, turn variable fully closed and set pointer at the last reference mark at the left end of the dial. Set volume control at maximum volume, tone control at maximum treble and keep output of signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator of rear section of variable Low side to chassis.	455KC	High freq. end.	Across voice coil.	A1,A2, A3,A4.	Adjust for maximum output.
250 MMF.	High side to ext. ant. lead.	1500KC	1500KC	"	A5	" " " "
250 MMF.	"	"	Tune for maximum output.	"	A6	" " " "
250 MMF.	"	600KC	"	"		Check calibration.

DISASSEMBLY INSTRUCTIONS

1. Remove the push-on type control knobs.
2. Disconnect the phono-motor receptacle.
3. Disconnect the phono-pickup and loop antenna plug from chassis.
4. Remove the hex head set screw from speaker plug. Remove speaker plug from chassis.
5. Loosen Phillips head screw securing line cord bracket and remove line cord. Slide line cord up through loop hole on right hand side of chassis board.
   NOTE: The phono-motor, pickup and speaker leads all extend through loop hole on right hand side of chassis board. The loop antenna leads on the left side of cabinet facing rear of cabinet.
6. Remove the three hex head machine screws and washers holding chassis to chassis board. Remove chassis.
7. Unclip the loop antenna from mounting rod and remove loop antenna from cabinet.
8. Remove the four hex nuts and lock washers holding speaker to cabinet. Remove speaker.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: AIR CHIEF PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7GT	6SK7GT	8N	
2	Converter	6SA7GT	6SA7GT	8AD	
3	IF Amp.	6SK7GT	6SK7GT	8N	
4	Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
5	Power Output	6V6GT	6V6GT	7AC	
6	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR CHIEF PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	30	350	25180	DY-3x20-450	EL-3231	PF444J‡	UP9DJ49		■ Filter
B	20	300				PRS150-10			▲ "
C	20	250			EL-312				"
8	.005	600	23031	S-6-005	TC-25	684-005	DT6D5	TP408	Line Bypass
9	.003	600	25184	S-6-003	TC-23	684-003	DT6D3	TP406	Tone Compensation
10	.002	600	25185	S-6-002	TC-22	684-002	DT6D2	TP405	" "
11	.01	600	25194	S-6-01	TC-11	684-01	DT6S1	TP410	Audio Coupling
12	.003	600	25184	S-6-003	TC-23	684-003	DT6D3	TP406	Output Plate Bypass
13	.01	600	25194	S-6-01	TC-11	684-01	DT6S1	TP410	Audio Coupling
14	.005	600	25183	S-6-005	TC-25	684-005	DT6D5	TP408	" "
15	.1	600	25215	S-6-1	TC-1	684-.1	DT6P1	TP418	Conv. Plate Decoupling
16	.1	600	25215	S-6-1	TC-1	684-.1	DT6P1	TP418	Screen Bypass
17	.05	600	25196	S-6-05	TC-15	684-05	DT6S5	TP415	AVC Filter
18	.05	600	25196	S-6-05	TC-15	684-05	DT6S5	TP415	" "
19	240	500	25187	MO.5-325	1FM-325	1468-00025	SW5T25	MC240	Tone Compensation
20	100	500	25188	MO.5-31	1FM-31	1468-0001	SW5T1	MC235	Audio Plate Bypass
21	240	500	25187	MO.5-325	1FM-325	1468-00025	SW5T25	MC240	IF Bypass Diode
22	47	500	25193	MO.5-45	1FM-45	1468-00005	SW5S5	MC225	Osc. Grid Capacitor
23	100	500	25188	MO.5-31	1FM-31	1468-0001	SW5T1	MC235	RF Coupling

†Do not use bypass section.
‡Parallel sections to obtain desired capacity.

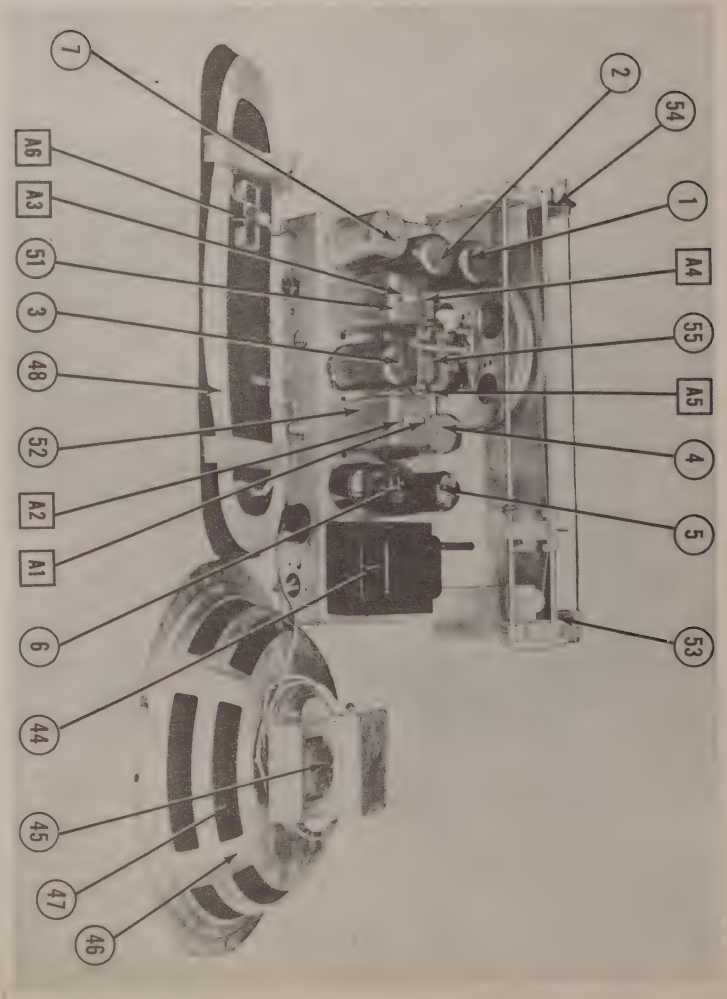
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR CHIEF PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
24A	3 Meg.	1	78119	TM257	D1B-139X	AT-116	Volume Control
B	Shaft		Not Req.	S825	E	KSS-3	Attach to 24A per instructions
C	Switch		" "	M26	41	SW-n	" " " " "
25	2 Meg.	1	90148				Tone Control & Phono-Radio Switch

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR CHIEF PART No.	IRC PART No.	IDENTIFICATION CODES
26	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. AVC Network
27	4700Ω	½	77211	BTS-4700	Yl.-Vi.-Red RF Plate Load
28	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. Converter Grid
29	22KΩ	½	77266	BTS-22K	Red-Red-Or. Oscillator Grid
30	470Ω	½	77261	BTS-470	Yl.-Vi.-Br. Converter Plate Decoupling
31	12KΩ	2	77155	BT-2-12K	Br.-Red-Or. Voltage Dropping
32	2.2 Meg.	½	77270	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
33	47KΩ	½	77213	BTS-47K	Yl.-Vi.-Or. Diode Filter
34	470KΩ	½	77217	BTS-470K	Yl.-Vi.-Yl. Diode Load
35	6.8 Meg.	½	77273	BTS-6.8 Meg.	Blue-Gray-Grn. 1st AF Grid
36	470KΩ	½	77217	BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
37	470KΩ	½	77217	BTS-470K	Yl.-Vi.-Yl. Output Grid
38	270Ω	1	77174	BW-1-270	Red-Vi.-Br. Output Cathode
39	220KΩ	½	77216	BTS-220K	Red-Red-Yl. Series Phono.
40	22KΩ	½	77266	BTS-22K	Red-Red-Or. Tone Compensation
41	220KΩ	½	77216	BTS-220K	Red-Red-Yl. Tone Compensation
42	2200Ω	2	77301	BT-2-2200	Red-Red-Red Filter
43	100Ω	½	77258	[illegible]	[illegible]

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	AIR CHIEF PART No.	STANCOR PART No.	THORDARSON PART No.	INSTALLATION NOTES
44	117VAC @ .430A	470VCT @ .063A	6.6VAC @ 2.5A		94025		T22R02	$Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIR CHIEF PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
45	5500Ω	4Ω	400Ω	.65Ω	94199	A-3877	T22A46		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIR CHIEF PART No.	JENSEN PART No.		
	FIELD	VC IMP.		SF-12*		*Change output transformer to match 8Ω voice coil.
46	M.	4Ω	81124	Mod. P12-S		
	CONE DIA.	VC DIA.				
47	5-5/8"	1"	NOT REACTILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

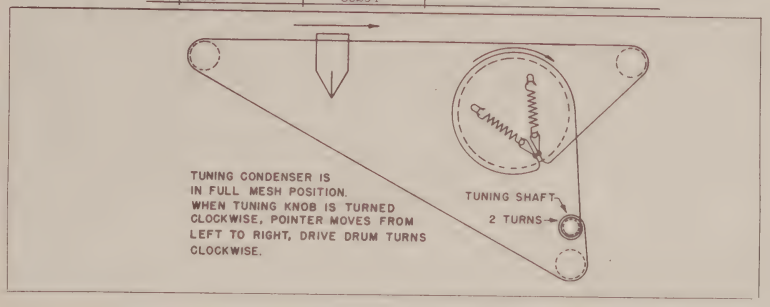
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	AIR CHIEF PART No.	MEISSNER PART No.	
48	Loop Ant.	.2Ω	1.2Ω	38602		
49	Wave Trap			38454		
50	Osc. Coil	.8Ω	5.8Ω	38453	14-1040	
51	Input IF	12.2Ω	12.1Ω	38536	16-6656	
52	Output IF	12.8Ω	12.2Ω	38537	16-6660	

DIAL LIGHT

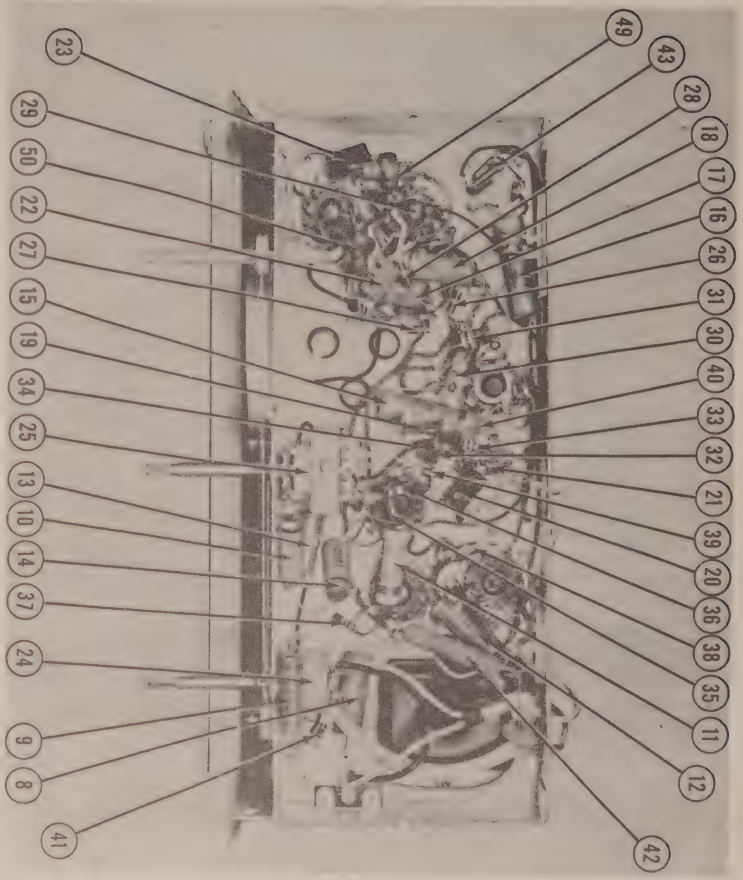
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					AIR CHIEF PART No.		
53	Bayonet	6-8	0.15	Blue	42144		Type 47
54	Bayonet	6-8	0.15	Blue	42144		" "

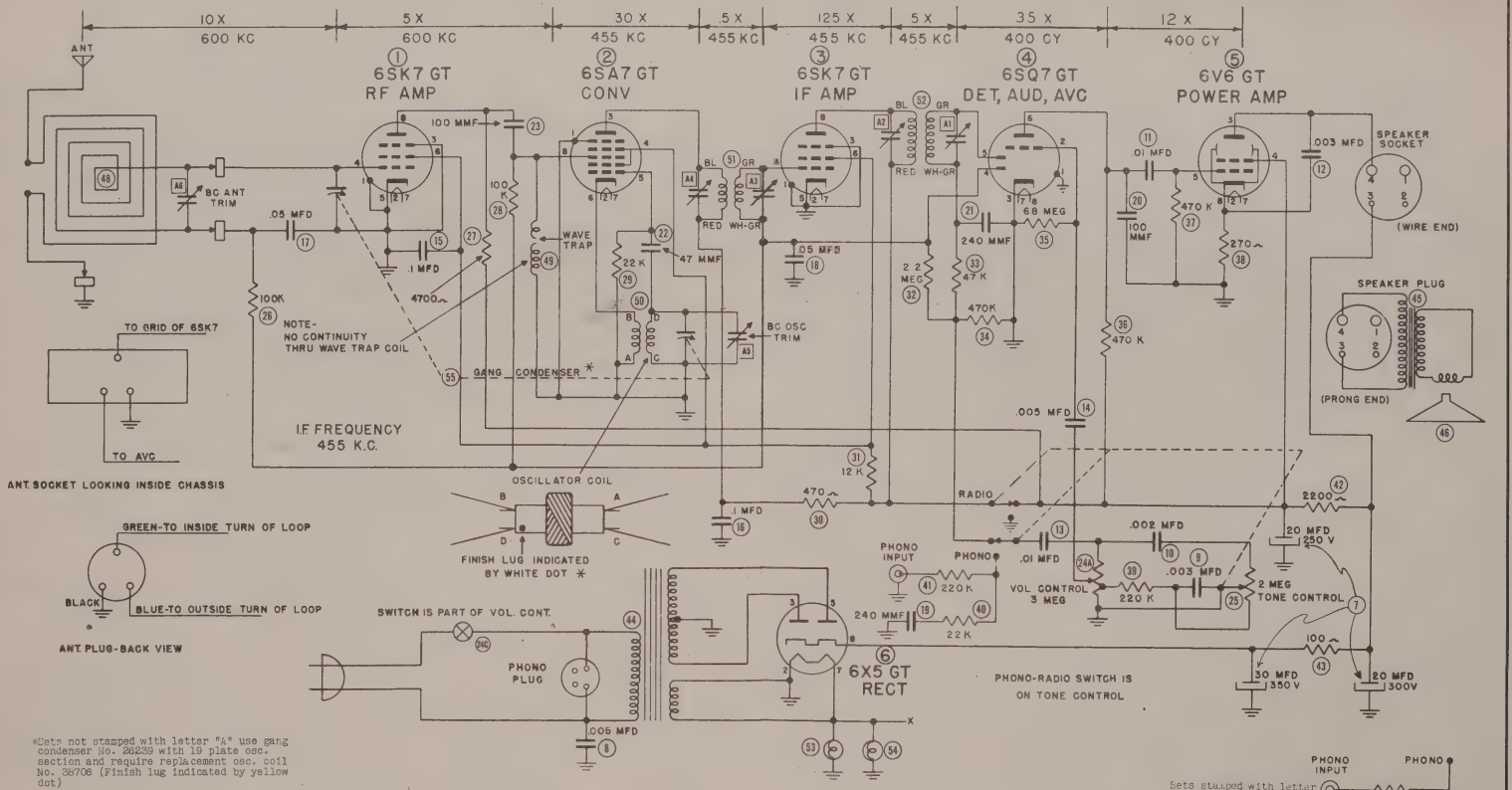
MISCELLANEOUS

ITEM No.	PART NAME	AIR CHIEF PART No.	NOTES
55	2 Gang Var. Cap	16154	(.2-452 MMF, 30-196 MMF)
A6	Trimmer	28032	Antenna Adjustment
	Dial Pointer	11289	
	Dial Glass	41257	
	Knob	39254	


TUNING CONDENSER IS IN FULL MESH POSITION. WHEN TUNING KNOB IS TURNED CLOCKWISE, POINTER MOVES FROM LEFT TO RIGHT, DRIVE DRUM TURNS CLOCKWISE.
TUNING SHAFT
2 TURNS

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0V.	0V.	0V.	-7 V.DC	0V.	68 V.DC	6.6 V.AC	151 V.DC
2	6SA7GT	0V.	0V.	185 V.DC	68 V.DC	-5 V. DC	0V.	6.6 V.AC	-5 V.DC
3	6SK7GT	0V.	0V.	0V.	-9 V.DC	0V.	68 V.DC	6.6 V.AC	190 V.DC
4	6SQ7GT	0V.	-.7 V.DC	0V.	-9 V.DC	-9 V.DC	87 V.DC	6.6 V.AC	0V.
5	6V6GT	0V.	6.6 V.AC	238 V.DC	190 V.DC	0V.	0V.	0V	9.8 V.DC
6	6X5GT	0V.	0V.	235 V.AC	0V.	235 V.AC	0V.	6.6 V.AC	270 V.AC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0 Ω	0 Ω	0 Ω	3 MEG.	0 Ω	112 KΩ	∞	105 KΩ
2	6SA7GT	0 Ω	0 Ω	100 KΩ	112 KΩ	19 KΩ	.5 Ω	∞	3 MEG.
3	6SK7GT	0 Ω	0 Ω	0 Ω	2.8 MEG.	0 Ω	112 KΩ	∞	100 KΩ
4	6SQ7GT	0 Ω	6 MEG.	0 Ω	2.8 MEG.	490 KΩ	570 KΩ	∞	0 Ω
5	6V6GT	INF.	∞	100 KΩ	100 KΩ	390 KΩ	INF.	0 Ω	260 Ω
6	6X5GT	INF.	0 Ω	150 Ω	INF.	140 Ω	INF.	∞	100 KΩ

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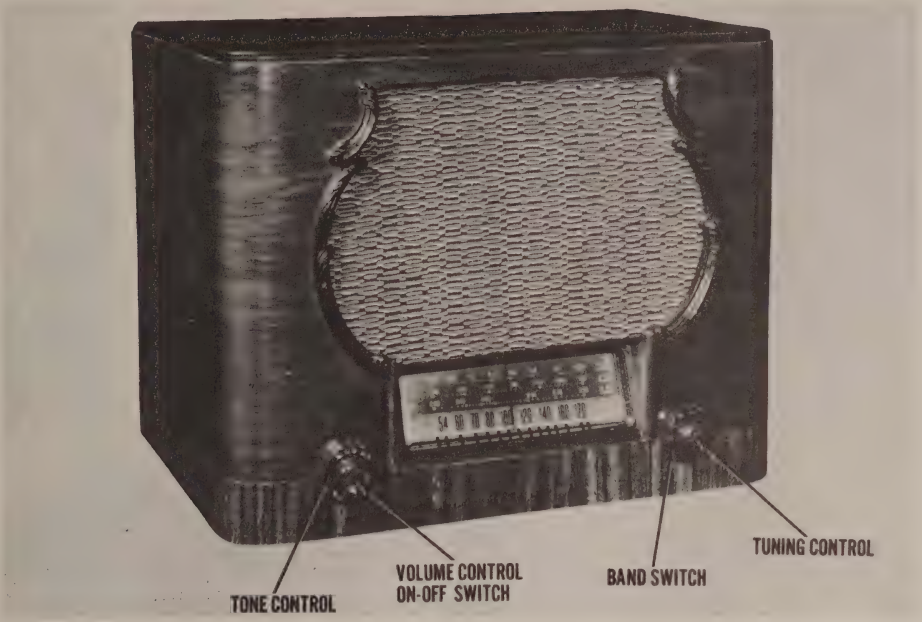
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

SILVERTONE
MODELS 6230 (CH.101.802),
6230A (CH.101.802-1)



SILVERTONE
MODELS 6230 (CH.101.802),
6230A (CH.101.802-1)

SILVERTONE MODEL 6230A

TRADE NAME	Silvertone, Model 6230 (Ch. 101.802), 6230A (Ch. 101.802-1)
MANUFACTURER	Sears, Roebuck & Co., 925 S. Homan St., Chicago, Ill.
TYPE SET	Battery Operated Superheterodyne Receiver
TUBES (FIVE)	Types, 1LG5 RF Amp., 1LC6 Osc.-Transl., 1LC5 IF Amp., 1LD5 Det.-AVC-AF, 1LB4 Power Output.
POWER SUPPLY RATING	1½ Volt "A" Battery & 90 Volt "B" Battery in Pack Form (Silvertone Pack #6300) 230 MA @ 1.4 Volts DC & 8 MA @ 96 Volts DC
TUNING RANGE—BROADCAST	540-1700KC SHORT WAVE 9.4-9.7MC, 11.6-12.0MC, 15.0-15.5MC.

ALIGNMENT INSTRUCTIONS

To set pointer, turn tuning control fully counter-clockwise and set pointer at the last reference mark at the left end of the dial. Set volume control at maximum volume and keep input from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin #6 of 1LC6. Low side to chassis.	455KC	BC	Low freq. end.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
75 MMF.	High side to ant. terminal. Low side to chassis.	1725KC	"	Last reference mark at right end of dial.	"	A5	"
75 MMF.	"	"	"	Tune for maximum output.	"	A6,A7.	"
75 MMF.	"	1500KC	"	1500KC	"	A8	"
75 MMF.	"	"	"	Tune for maximum output.	"	A9,A10	"
400Ω	"			Last reference mark at right end of dial.	"	A11	Adjust so that top of core is 1 24/32" from the top turn of the coil.
400Ω	"	15.2MC	15MC	15.2MC	"	A12	Adjust for maximum output
400Ω	"	15.2MC	"	"	"	A13, A14.	Rock tuning control and adjust for maximum output
400Ω	"	11.8MC	11MC	11.8MC	"	A15.	Adjust for maximum output
400Ω	"	"	"	"	"	A16, A17.	Rock tuning control and adjust for maximum output
400Ω	"	9.6MC	9MC	9.6MC	"	A18.	Adjust for maximum output
400Ω	"	"	"	"	"	A19, A20	Rock variable and adjust.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	1LG5	1LG5	7A0	
2	osc.-Transl.	1LC6	1LC6	7AK	
3	IF Amp.	1LC5	1LC5	7A0	
4	Det.-AVC-AF	1LD5	1LD5	6AX	
5	Power Output	1LB4	1LB4	5AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	10	150	R57128	DY-2X10-150	EL-101	AF22F	UP2215	FP217	Pwr. Supp. Bypass
B	10	150							" " "
7	.05	200		S-4-05	TC-15	484-05	DT4S5	TP426	" " "
8	.001	600		S-6-001	TC-21	684-001	DT6D1	TP404	Output Plate Bypass
9	.005	600		S-6-005	TC-25	684-005	DT6D5	TP408	Audio Coupling
10	.01	200		S-4-01	TC-11	484-01	DT4S1	TP421	Audio Screen Bypass
11	.001	600		S-6-001	TC-21	684-001	DT6D1	TP404	Audio Coupling
12	.01	200		S-4-01	TC-11	484-01	DT4S1	TP421	Osc. Anode Decoupling
13	.01	200		S-4-01	TC-11	484-01	DT4S1	TP421	Conv. Screen Bypass
14	.01	200		S-4-01	TC-11	484-01	DT4S1	TP421	RF Plate Decoupling
15	.05	200		S-4-05	TC-15	484-05	DT4S5	TP426	AVC Filter
16	.01	200		S-4-01	TC-11	484-01	DT4S1	TP421	Screen Bypass
17	250	500		MO.5-325	1FM-325	1468-00025	5W5T25	MC240	Tone Compensation
18	50	500		MO.5-45	1FM-45	1468-00005	5W5Q5	MC225	Audio Plate Bypass
19	50	500		MO.5-45	1FM-45	1468-00005	5W5Q5	MC225	Osc. Grid Capacitor
20	100	500		MO.5-31	1FM-31	1468-0001	5W5T1	MC235	RF Coupling
21	250	500		MOS.5-325	MS-325	1469-00025	5R5T25	MC5240	AVC Filter
22	150	500		MO.5-315	1FM-315	1468-00015	5W5T15	MC236	Ant. Coupling

CONTROLS

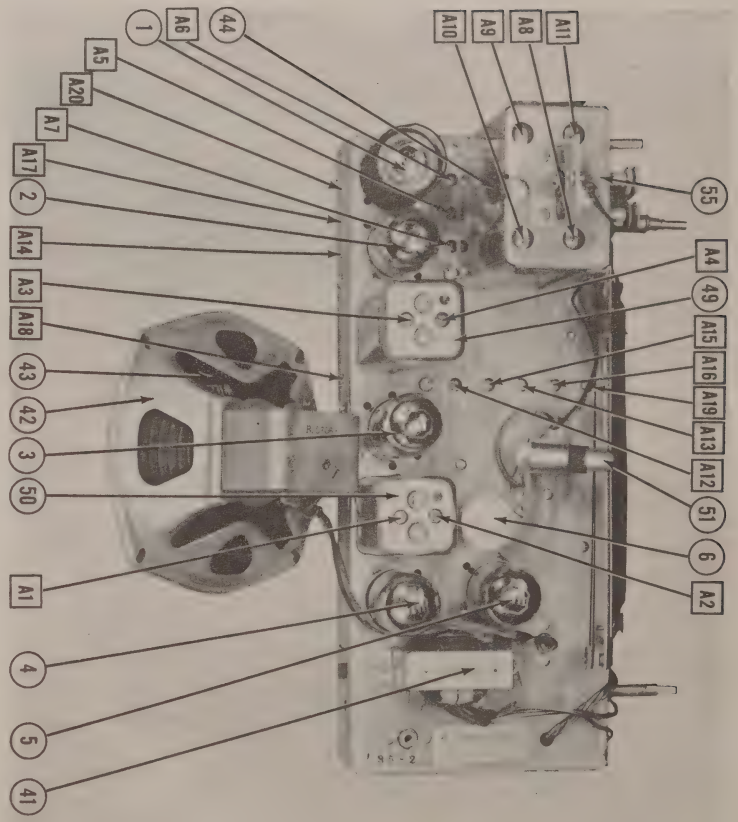
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23A	Switch	1	R57071				Tone Switch Front Section #
B	500KΩ						Volume Control. Center Section #
C	Switch						Off-On Switch Rear Section #

This is a 3 section unit operated by concentric shafts.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	IDENTIFICATION CODES
24	1 Meg.	1/3		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
25	3.3 Meg.	1/3		BTS-3.3 Meg.	Or.-Or.-Grn. " " "
26	1 Meg.	1/3		BTS-1 Meg.	Br.-Blk.-Grn. Converter Grid
27	190KΩ	1/3		BTS-190K	Br.-Gray-Yl. Oscillator "
28	68KΩ	1/3		BTS-68K	Blue-Gray-Or. " " Screen Dropping
29	680Ω	1/3		BTS-680	Blue-Gray-Br. Decoupling
30	2.2 Meg.	1/3		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
31	33KΩ	1/3		BTS-33K	Or.-Or.-Or. Voltage Dropping
32	68KΩ	1/3		BTS-68K	Blue-Gray-Or. Screen "
33	15 Meg.	1/3		BTS-15Meg.	Br.-Grn.-Blue 1st AF Grid
34	6.8 Meg.	1/3		BTS-6.8 Meg.	Blue-Gray-Grn. " " Screen Dropping
35	1 Meg.	1/3		BTS-1 Meg.	Br.-Blk.-Grn. " " Plate Load
36	.72Ω	1/2		BW-½-.68	Vi.-Red-Silver Battery Saver
37	2.2 Meg.	1/3		BTS-2.2 Meg.	Red-Red-Grn. Output Grid
38	820Ω	1/3		BTS-820	Gray-Red-Br. Bias
39	1800Ω	1/3		BTS-1800	Br.-Gray-Red Battery Saver
40	680Ω	1/3		BTS-680	Blue-Gray-Br. Voltage Dropping

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	THORDARSON PART No.		
	PRI.	SEC.	PRI.	SEC.					
41	10000Ω	3.4Ω	620Ω	.35Ω	R57075	A-38791	T-22S471		1 Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SILVERTONE PART No.	JENSEN PART No.		
42	FIELD	VC IMP.	R57082	ST-109 * Mod.P6-W		* Drill new mounting holes.
	PM	3.4Ω				
	CONE DIA.	VC DIA.				
43	5"	5/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

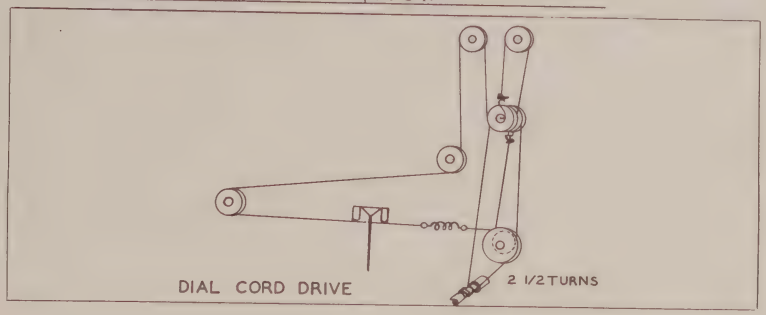
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	SILVERTONE PART No.	MEISSNER PART No.	
44A	Ant. Coil		9.5Ω			Items 44A, 44B, 44C, 44D, ganged together and slug tuned. May be obtained as complete tuning unit under part # R57089.
44B	RF Coil BC		5.5Ω			
44C	RF Coil SW		6Ω			
44D	Osc. Coil		4Ω			
45	Ant. Choke	102Ω		R45255		
46	SW Ant. Coil	.5Ω	.2Ω	R45074		
47	SW RF Coil		.2Ω	R45077		
48	SW Osc. Coil	1.5Ω	.2Ω	R57076		
49	Input IF	10.5Ω		R57120	16-6658‡	‡ From low end secondary add 250 MMFD tap and 15 Meg. resistor to ground.
50	Output IF	12Ω		R57095	16-6670	

DIAL LIGHT

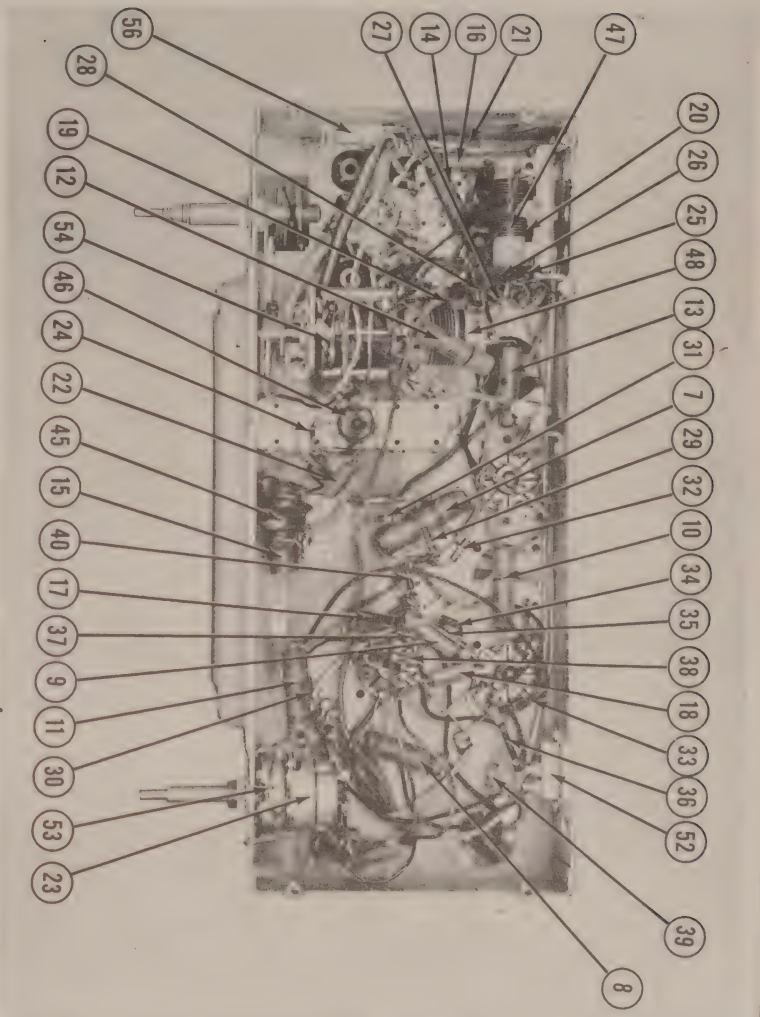
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					SILVERTONE PART No.		
51	Bayonet	2.5	0.5	White	R57129		Type 43

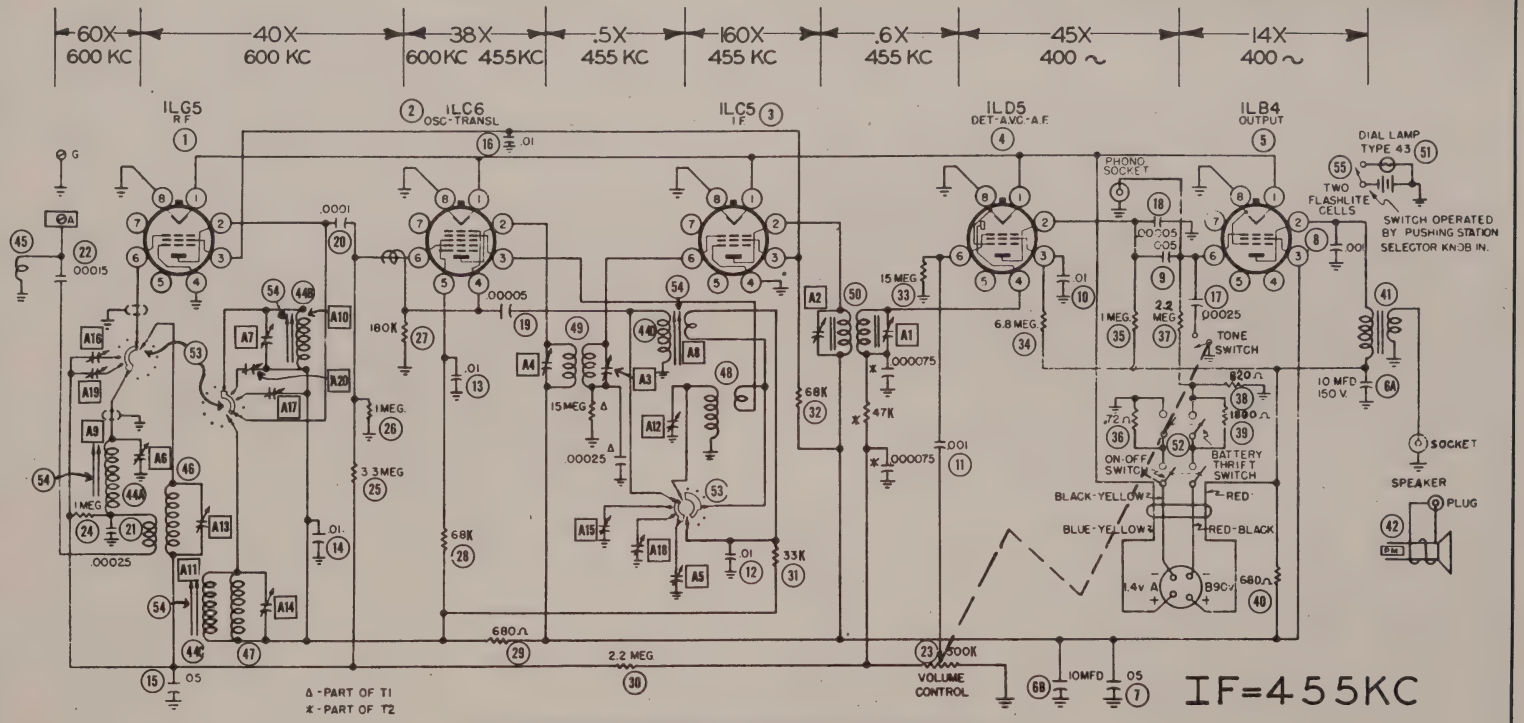
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
52	Batt. Thrift SW	R57038	D.P.S.T.
53	Band Switch	R57064	
54	Tuning Assembly	R57089	
55	Dial Light Switch		S.P.S.T.



CHASSIS—BOTTOM VIEW





NOTES: VOLTAGES AND RESISTANCES MEASURED WITH BATTERY SWITCH IN NEW POSITION BROADCAST TREBLE AND VOLUME CONTROL MAXIMUM.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	ILG5	1.4V.DC	73V.DC	38V.DC	0V.	0V.	0V.	0V.	0V.
2	ILC6	1.4V.DC	73V.DC	37V.DC	0V.	29V.DC	0V.	0V.	0V.
3	ILC5	1.4V.DC	73V.DC	38V.DC	0V.	0V.	0V.	0V.	0V.
4	ILD5	1.4V.DC	30V.DC	18V.DC	-.15V.DC	0V.	0V.	0V.	0V.
5	ILB4	1.4V.DC	73V.DC	72V.DC	0V.	0V.	-.8V.DC	-6.7V.DC	0V.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	ILG5	*	150KΩ	230KΩ	0Ω	INF.	2.2MEG.	2.2MEG.	0Ω
2	ILC6	*	150KΩ	185KΩ	170KΩ	220KΩ	780KΩ	135KΩ	0Ω
3	ILC5	*	150KΩ	230KΩ	0Ω	INF.	6 MEG.	INF.	0Ω
4	ILD5	*	1 MEG.	6 MEG.	420KΩ	INF.	12 MEG.	INF.	0Ω
5	ILB4	*	150KΩ	150KΩ	0Ω	INF.	2 MEG.	720Ω	0Ω

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

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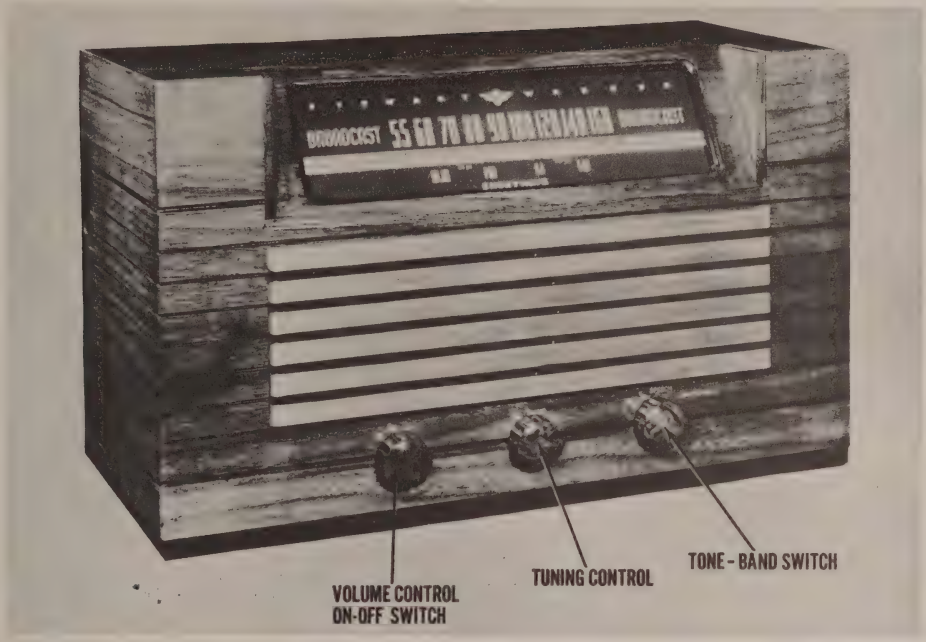
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

471-21

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to chassis.

1. DC Voltage measurements are at 20,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.



STEWART-WARNER
MODEL 9000-B

STEWART-WARNER
MODEL 9000-B

STEWART-WARNER MODEL 9000-B

TRADE NAME	Stewart-Warner Model 9000-B
MANUFACTURER	Stewart-Warner Corp., 1826 Diversey Pkway., Chicago, Ill.
TYPE SET	AC-DC 2 Band Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types, 12SK7 RF Amp., 12SA7 1st Det.-Osc., 12SF7 IF-2nd Det.-AVC, 12SK7 1st AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	117 Volts AC-DC RATING .240 Amps. @ 117V AC
TUNING RANGE--BROADCAST	540-1650KC SHORT WAVE 9.0-12.0MC

ALIGNMENT INSTRUCTIONS

To set pointer turn variable fully closed and set pointer at 1st reference mark at left end of dial back plate. Use isolation transformer if available. If not, connect capacitor in series with low side of signal generator and B-. Set volume control at maximum volume and keep input from signal generator no higher than is necessary to obtain output reading. Care should be taken that the SW oscillator is aligned on the correct peak. To check, tune approximately 910KC below incoming signal. If image is not heard at this point turn to 12MC reference mark and open A8 to next peak. Then readjust A9 and recheck for image. Use insulated alignment screwdriver for adjustment.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
200 MMF	High side to pin #8 (Control grid) of 12SA7. Low side to B-.	455KC	BC	Any non-interfering point.	Across voice coil	A1,A2 A3,A4.	Adjust for maximum output
200 MMF	High side to ext. ant. clip. Low side to chassis.	1500KC	"	1500KC reference mark (1st line at right)	"	A5	" " " "
200 MMF	"	"	"	Tune for maximum output.	"	A6,A7	" " " "
400Ω	"	12.0MC	SW	12MC reference mark (2nd mark from right)	"	A8	" " " "
400Ω	"	"	"	Tune for maximum output.	"	A9	Rock variable and adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: STEWART WARNER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7	12SK7	6N	
2	1st Det.-Osc.	12SA7	12SA7	6R	
3	IF-2nd Det.-AVC	12SF7	12SF7	7AZ	
4	1st AF	12SK7	12SK7	6N	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: STEWART-WARNER PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	502256	DY-4020-150	EL-24	AF84D4A+	UP4CJ59+	FP306+	■ Filter
B	20	150							▲ "
8	.05	400	502157	S-4-05	TC-15	484-05	DT4S5	TP426	Rect. Bypass
9	.02	400	502152	S-4-02	TC-12	484-02	DT4S2	TP423	Feedback
10	.01	400	502151	S-4-01	TC-11	484-01	DT4S1	TP421	Output Plate Bypass
11	.004	400	502156	S-6-006	TC-24	484-004	DT6D4	TP407	Audio Coupling
12	.05	200	502153	S-4-05	TC-15	484-05	DT4S5	TP426	Audio Plate Decoup.
13	.002	400	502453	S-6-002	TC-22	484-002	DT6D2	TP405	Audio Coupling
14	.0008	400	502470	MO.3-38	MS-38	1479-0008	1W5T8	MC251	IF Bypass Vol. Cont.
15	.25	200	502282	S-4-25	TC-2	484-.25	DT4P25	TP430	Conv. Screen Bypass
16	.2	400	502158	S-4-2	TC-2	484-.2	DT4P2	TP429	Line Isolation
17	.1	200	502155	S-4-1	TC-1	484-.1	DT4P1	TP428	AVC Filter
18	.01	400	502151	S-4-01	TC-11	484-01	DT4S1	TP421	Ant. Coupling
19	110	500	502180	MO.5-31	1FM-31	1468-0001	5W5T1	MC235	Audio Plate Bypass
20	110	500	502180	MO.5-31	1FM-31	1468-0001	5W5T1	MC235	IF Bypass Diode
21	50	500	502159	MO.5-45	1FM-45	1468-00005	5W5Q5	MC225	Osc. Grid Capacitor
22	315	500	502162						Fixed Padder SW
54	10								Fixed Trimmer *

+ Do not use bypass section.

* Not used in all models.

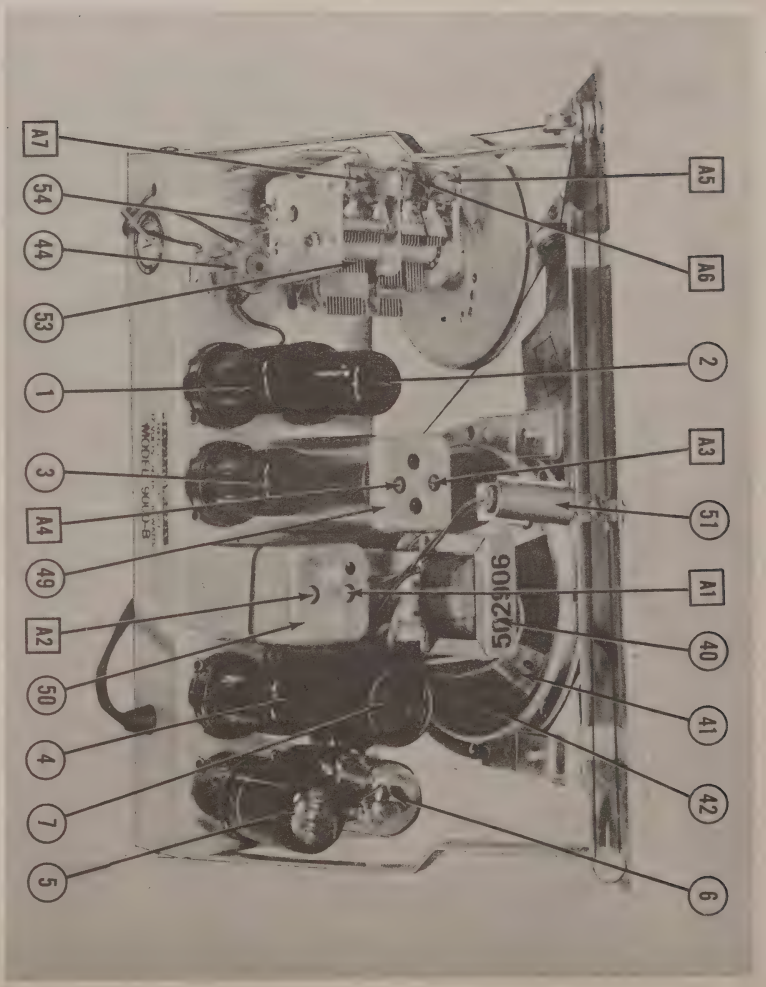
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STEWART-WARNER PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23A	500KΩ	1	502145	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 23A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STEWART-WARNER PART No.	IRC PART No.	IDENTIFICATION CODES
24	390Ω	½	502140	BW-½-390	Or.-White-Br. RF Cathode
25	22KΩ	½	502130	BTS-22K	Red-Red-Or. Oscillator Grid
26	220KΩ	½	502133	BTS-220K	Red-Red-Yl. Line Isolation
27	4700Ω	½	502991	BTS-4700	Yl.-Vi.-Red Mixer Screen Dropping
28	3.3 Meg.	½	502289	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
29	47Ω	½	502264	BW-½-47	Yl.-Vi.-blk. IF Cathode
30	47KΩ	½	502131	BTS-47K	Yl.-Vi.-Or. Diode Filter
31	10 Meg.	½	502136	BTS-10 Meg.	Br.-blk.-blue 1st AF Grid
32	2200Ω	½	502128	BTS-2200	Red-Red-Red " " Cathode
33	2.2 Meg.	½	502135	BTS-2.2 Meg.	Red-Red-Grn. " " Screen Dropping
34	220KΩ	½	502133	BTS-220K	Red-Red-Yl. " " Plate Load
35	220KΩ	½	502133	BTS-220K	Red-Red-Yl. " " " Decoupling
36	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. Output Grid
37	130Ω	½	502138	BW-½-150	Br.-Or.-Br. " Cathode
38	1500Ω	1	502469	BTA-1500	Br.-Grn.-Red Filter
39	33Ω	½	502574	BW-½-33	Or.-Or.-blk. Rectifier Ballast.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	STEWART-WARNER PART No.	STANCOR PART No.	THORDARSON PART No.	UTAH PART No.
40A	2700Ω	3.9Ω	240Ω	.8Ω	502213	A-3876 ‡		‡ Bend mounting tabs down and mount on original bracket.
40B 40C					504244 502904	ALTERNATE TRANSFORMERS		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD RES.	VC IMP.	STEWART-WARNER PART No.	JENSEN PART No.		
41	PM	14Ω	R-502998 A-502998 W-502998	ST-1071 P8-V		‡Fabricate new mounting bracket.
42	CONE DIA. 5"	VC DIA. ½"	502214 502903 504246			Use on R-502998 " " A-502998 " " W-502998

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	STEWART-WARNER PART No.	MEISSNER PART No.	
43	Loop Ant.	0Ω	.1Ω	502503		
44	Ant. Cap. Coil	.7Ω	3Ω	502121		
45	SW Ant. Coil	.5Ω	0Ω	502740		
46	BC RF Coil	7Ω	7.5Ω	502142		
47	BC Osc. Coil	1.5Ω	1Ω	502198		
48	SW Osc. Coil	.1Ω	.1Ω	502197		
49	Input IF	20Ω	20Ω	502102	16-6658	
50	Output IF	18Ω	18Ω	502103	16-6660	

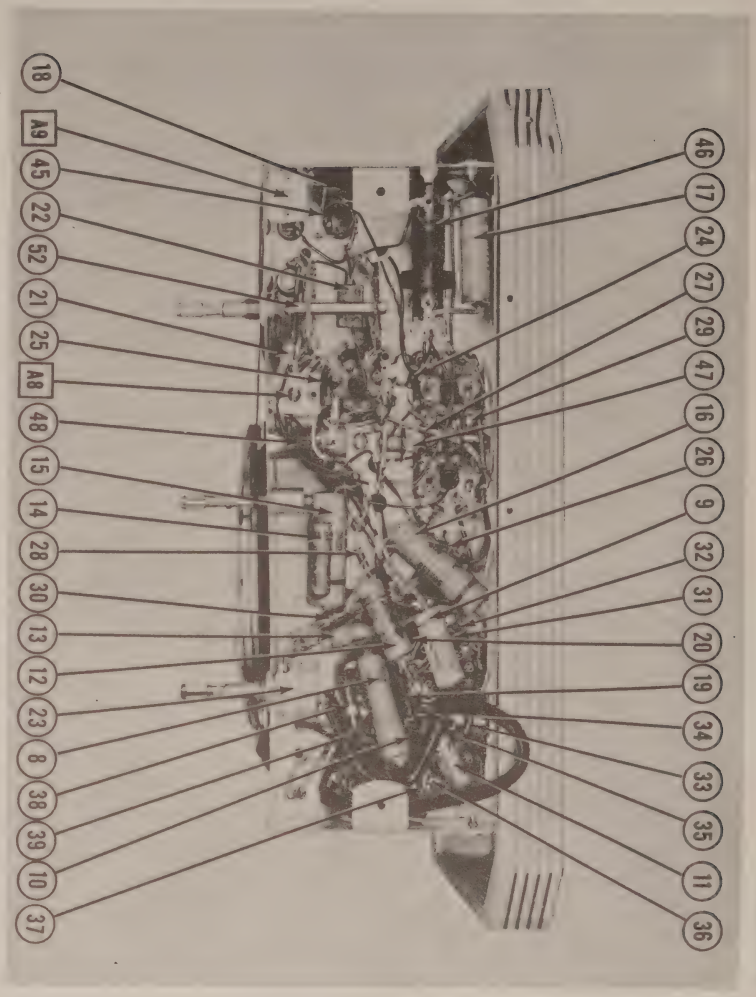
DIAL LIGHT

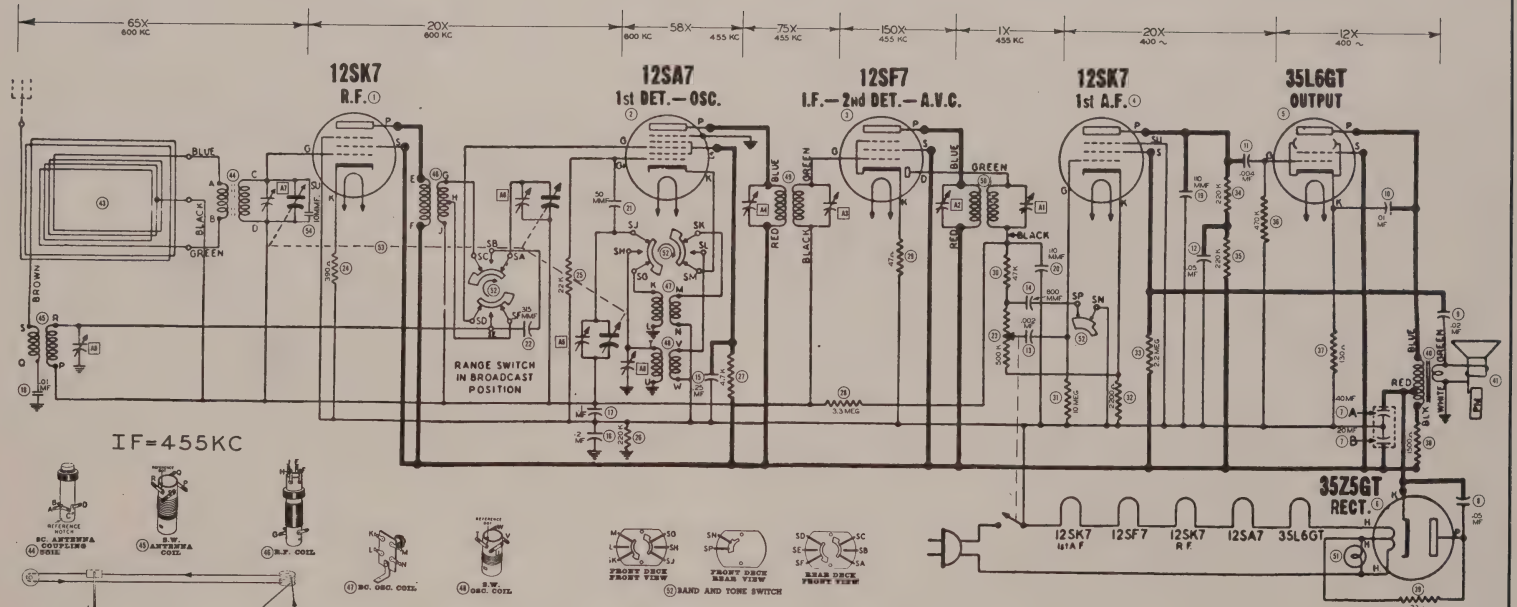
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					STEWART-WARNER PART No.		
51	Bayonet	6-8	0.15	Brown	502472		Type 47

MISCELLANEOUS

ITEM No.	PART NAME	STEWART-WARNER PART No.	NOTES
52	Switch	502199	Band and Tone
53	3 Gang Var. Cap.	502123	Osc. RF & Ant. Trimmers Incl.
54	Trimmer Cap.	502172	SW Osc. Adj. 25-100 MMFD.
55	" "	502142	SW Ant. Adj. 25-100 MMFD.
	Dial Scale	502491	Glass
	Knob	501773	Volume or Tuning
	"	501779	Tone & Band Switch

CHASSIS—BOTTOM VIEW





NOTE: VOLTAGE AND RESISTANCE READINGS TAKEN IN STANDARD BROADCAST POSITION.

DIAL AND POINTER DRIVE CORD ARRANGEMENT

To string dial cord, set gang condenser to fully meshed position and use following parts:

114855 Clip on end of cord
117057 Cord (58 inches)
119087 Ring for dial cord
161384 Tension Spring

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	-2V.DC	25.5VAC	0V.	-2V.DC	2.7V.DC	77V.DC	3.6.5VAC	77V.DC
2	12SA7	-2V.DC	47.5VAC	77V.DC	58VDC	-3.2V.DC	0V.	36.5VAC	-2V.DC
3	12SF7	-2V.DC	-2V.DC	55V.DC	77V.DC	-1V.DC	77V.DC	12.5 VAC	25.5VAC
4	12SK7	-2V.DC	0V.	0V.	-2V.DC	35V.DC	75V.DC	12.5 VAC	23VDC
5	35L6GT	-2V.DC	47.5VAC	112 V.DC	77V.DC	0V.	0V.	85VAC	42V.DC
6	35Z5GT	0V.	117V.AC	113V.AC	117V.DC	112VAC	0V.	85VAC	118V.DC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

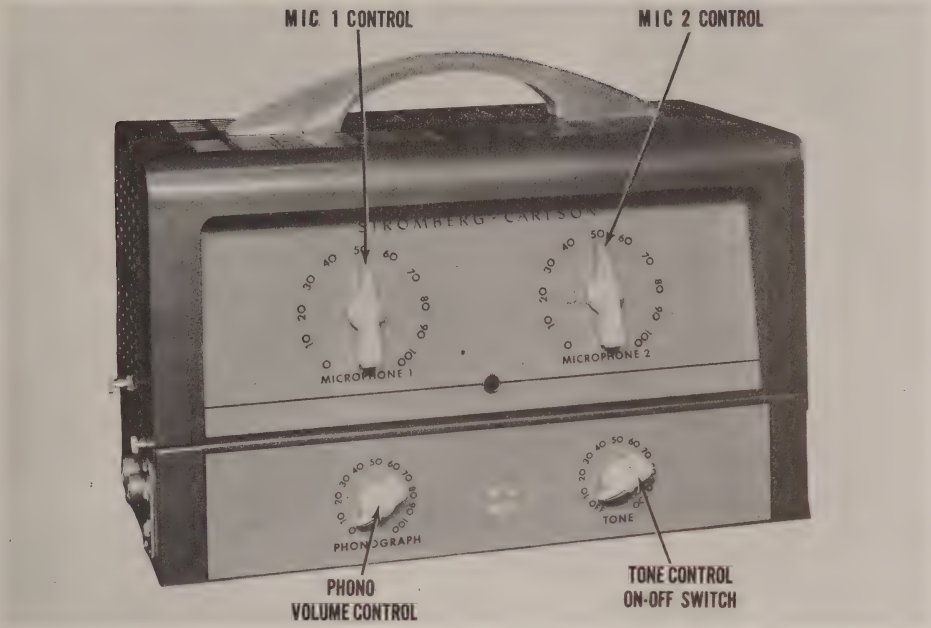
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	195Ka	22a	0a	3.7MEG.	350a	30Ka	32a	30Ka
2	12SA7	195Ka	42a	30Ka	35Ka	20Ka	15a	32a	3.7MEG.
3	12SF7	195Ka	3.7MEG.	45a	30Ka	430Ka	30Ka	11a	22a
4	12SK7	195Ka	0a	0a	0 MEG.	2.3Ka	2.2MEG.	11a	470Ka
5	35L6GT	195Ka	42a	30Ka	30Ka	430Ka	430Ka	70a	22a
6	35Z5GT	inf.	97a	94a	30Ka	122a	0a	70a	30Ka

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

471-22

1. Use the 600KC signal with 400-cycle modulation connected as shown on schematic. (Use nearby frequency if local station interferes.)
2. For RF & IF measurements, connect negative terminal of 1½ Volt battery to AVC lead and the positive terminal to chassis.
3. Besure radio is carefully tuned to signal generator frequency. (Use weak signal for sharper tuning.)

1. DC Voltage measurements are at 20,000 ohms per volt. AC voltages measured at 1000 ohms per volt.
2. Sockat connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



STROMBERG-CARLSON MODEL 32

TRADE NAME	Stromberg-Carlson, Model 32
MANUFACTURER	Stromberg-Carlson Co., 100 Carlson Rd., Rochester 3, N.Y.
TYPE SET	AC Operated 15 Watt 6 Tube Amplifier
TUBES (SIX)	Types 6SC7 Pre-Amp., 6J5 Audio Amp., 6SC7 Driver-Inverter, 2-6L6G Push-Pull Power Output, 5Y3GT Rectifier
POWER SUPPLY	105-125 Volts AC RATING .870 Amp. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SC7	0V.	73V.DC	0V.	0V.	78V.DC	1.1V.DC	∓	∓
2	6J5	0V.	∓	42V.DC	0V.	0V.	0V.	∓	1.7V.DC
3	6SC7	0V.	124V.DC	0V.	0V.	115V.DC	1.3V.DC	∓	∓
4	6L6G	0V.	∓	370V.DC	340V.DC	0V.	0V.	∓	24.5V.DC
5	6L6G	0V.	∓	370V.DC	350V.DC	0V.	0V.	∓	24.5V.DC
6	5Y3GT	0V.	380V.DC	0V.	320V.AC	0V.	320V.AC	0V.	380V.DC

∓ NOTE: MEASURE 6.6V. BETWEEN TERMINALS 2 AND 7 ON TUBES 2,4, AND 5, AND TERMINALS 7 AND 8 ON TUBES 1 AND 3.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SC7	0Ω	340KΩ	850KΩ	870KΩ	340KΩ	1.4KΩ	*	*
2	6J5	0Ω	*	210KΩ	INF.	590KΩ	INF.	*	1.8KΩ
3	6SC7	0Ω	300KΩ	490KΩ	10KΩ	340KΩ	1.3KΩ	*	*
4	6L6G	0Ω	*	52KΩ	52KΩ	310KΩ	INF.	*	180Ω
5	6L6G	0Ω	*	52KΩ	52KΩ	310KΩ	INF.	*	180Ω
6	5Y3GT	INF.	52KΩ	0Ω	75Ω	INF.	80Ω	INF.	52KΩ

* NOTE: MEASURE .2Ω BETWEEN TERMINALS 2 AND 7 ON TUBES 2,4, AND 5, AND TERMINALS 7 AND 8 ON TUBES 1 AND 3.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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STROMBERG-CARLSON
MODEL 32

STROMBERG-CARLSON
MODEL 32

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: STROM-CARLSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Dual Pre-amp.	6SC7	6SC7	8S	
2	Audio	6J5	6J5	6Q	
3	Driver-Inverter	6SC7	6SC7	8S	
4	Power Output	6L6G	6L6G	7AC	
5	Power Output	6L6G	6L6G	7AC	
6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: STROMBERG CARLSON PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	450	35590	DY-406 *	EL-424	AF4444J ‡	UP9BJ39	FP238	▲ Filter
B	30	350							■ "
C	50	50		M-50-50	TA-50	PRS50-50	BR505	TC39	Cath. Bypass
8A	10	350	34698	DY-4x10-450	EL-311	AF2222J 1	UP7DJ51 *	FP444	▲ Filter
B	10	300							■ "
C	10	250							▲ "
D	20	50		M-25-50	TA-525	PRS50-25	BR205		Cath. Bypass
9	50	25	41157	M-50-25	TA-50	PRS25-50	BR502	TC29	" "
10	.1	400	25483	S-4-1	TC-1	484-.1	DT4P1	TP428	Filament RF Ground
11	.05	400	40632	S-4-05	TC-15	484-05	DT4S5	TP426	Audio Coupling
12	.05	400	40632	S-4-05	TC-15	484-05	DT4S5	TP426	" "
13	.01	600	25485	S-6-01	TC-11	684-01	DT6S1	TP410	Tone Compensation
14	.05	400	40632	S-4-05	TC-15	484-05	DT4S5	TP426	Audio Coupling
15	.05	400	40632	S-4-05	TC-15	484-05	DT4S5	TP426	" "
16	.05	400	40632	S-4-05	TC-15	484-05	DT4S5	TP426	" "
17	500	500	27009	MO.5-35	1FM-35	1468-0005	5W5T5	MC245	Tone Compensation

* Do not use bypass section.

† Do not use one 10 MFD. section.

‡ Parallel sections to obtain desired capacity.

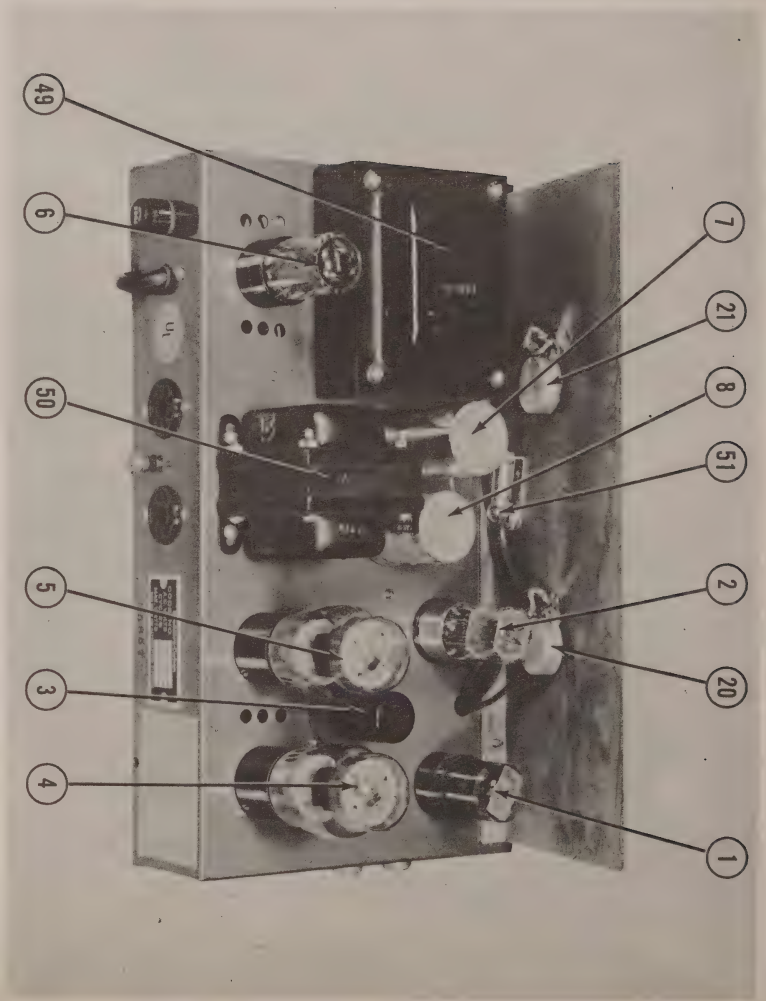
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STROMBERG CARLSON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
18A	1 Meg.	1	39838	UM159	D11-137	M-61-S	Tone Control.
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 18A per instructions
C	Switch		" "	M26	41	SW-A	" " " " " "
19A	1 Meg.	1	46313	MR53	D13-137	M-63-Z	Phono Control.
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 19A per instructions
20A	1 Meg.	1	46313	MR53	D13-137	M-63-Z	Mike #1 Control.
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 20A per instructions
21A	1 Meg.	1	46313	MR53	D13-137	M-63-Z	Mike #2 Control.
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 21A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STROMBERG-CARLSON PART No.	IRC PART No.	IDENTIFICATION CODES
22	1 Meg.	1/2	28191	BTS-1 Meg.	Br.-blk.-Grn. 1st Pre-Amp. Grid
23	1 Meg.	1/2	28191	BTS-1 Meg.	Br.-blk.-Grn. 2nd " "
24	1500Ω	1/2	28180	BTS-1500	Br.-Grn.-Red Pre-Amp. Cathode
25	330KΩ	1/2	28185	BTS-330K	Or.-Or.-Yl. 1st Pre-Amp. Plate Load.
26	330KΩ	1/2	28185	BTS-330K	Or.-Or.-Yl. 2nd " " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	STROMBERG-CARLSON PART No.	IRC PART No.	
27	1 Meg.	½	2B191	BTS-1 Meg.	Br.-Blk.-Grn. Audio Grid
28	1 Meg.	½	2B191	BTS-1 Meg.	Br.-Blk.-Grn. " " "
29	47KΩ	2	70056	BT-2-47K	Yl.-Vi.-Or. Bleeder
30	2200Ω	1	30616	BTA-2200	Red-Red-Red Voltage Dropping
31	10KΩ	1	30417	BTA-10K	Br.-Blk.-Or. " "
32	10KΩ	1	30417	BTA-10K	Br.-Blk.-Or. " "
33	3500Ω	10	46360	AB-3500	Filter
34	100KΩ	½	2B006	BTS-100K	Br.-Blk.-Yl. Audio Plate Load
35	100KΩ	½	2B006	BTS-100K	Br.-Blk.-Yl. " " " Filter
36	2200Ω	½	2B162	BTS-2200	Red-Red-Red " Cathode
37	1 Meg.	½	2B191	BTS-1 Meg.	Br.-Blk.-Grn. Driver Grid
38	1 Meg.	½	2B191	BTS-1 Meg.	Br.-Blk.-Grn. Feedback
39	1500Ω	½	2B160	BTS-1500	Br.-Grn.-Red Driver Cathode
40	330KΩ	½	2B185	BTS-330K	Or.-Or.-Yl. Phase Inverter Plate Load
41	330KΩ	½	2B185	BTS-330K	Or.-Or.-Yl. Driver Plate Load
42	330KΩ	½	2B185	BTS-330K	Or.-Or.-Yl. Output Grid
43	330KΩ	½	2B185	BTS-330K	Or.-Or.-Yl. " "
44	10KΩ	½	2B170	BTS-10K	Br.-Blk.-Or. Phase Inverter Grid
45	200Ω	10	46357	AB-200	Output-Cathode
46	100Ω	½		BW-½-100	Br.-Blk.-Br. Filament Shunt See Note
47	100Ω	½		BW-½-100	Br.-Blk.-Br. " " " "
48	1 Meg.	½	2B191	BTS-1 Meg.	Br.-Blk.-Grn. Audio Grid

Note: Some models use center tapped filament winding and omit these parts.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	SEC. 3	STROMBERG CARLSON PART No.	STANCOR PART No.	THORDARSON PART No.	
49	117V AC @ .37A	720V CT @ .13A	5.1V AC @ 1.0A	6.3V AC @ 2.0A	46316	P-6314 #	T22R07	# Drill new mounting holes.

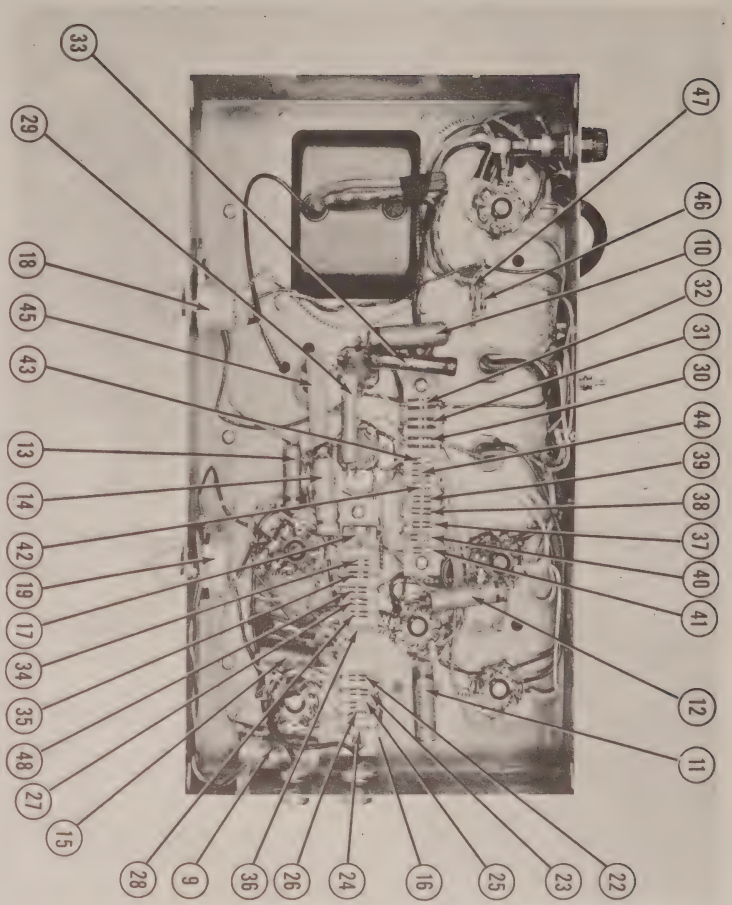
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		STROMBERG CARLSON PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
50	6800 Ω CT	500Ω 15Ω 8Ω 4Ω	280Ω CT	1Ω .75Ω .5Ω .44Ω	46317	A-3885 #	T22S06		# Drill new mounting holes.

DIAL LIGHT

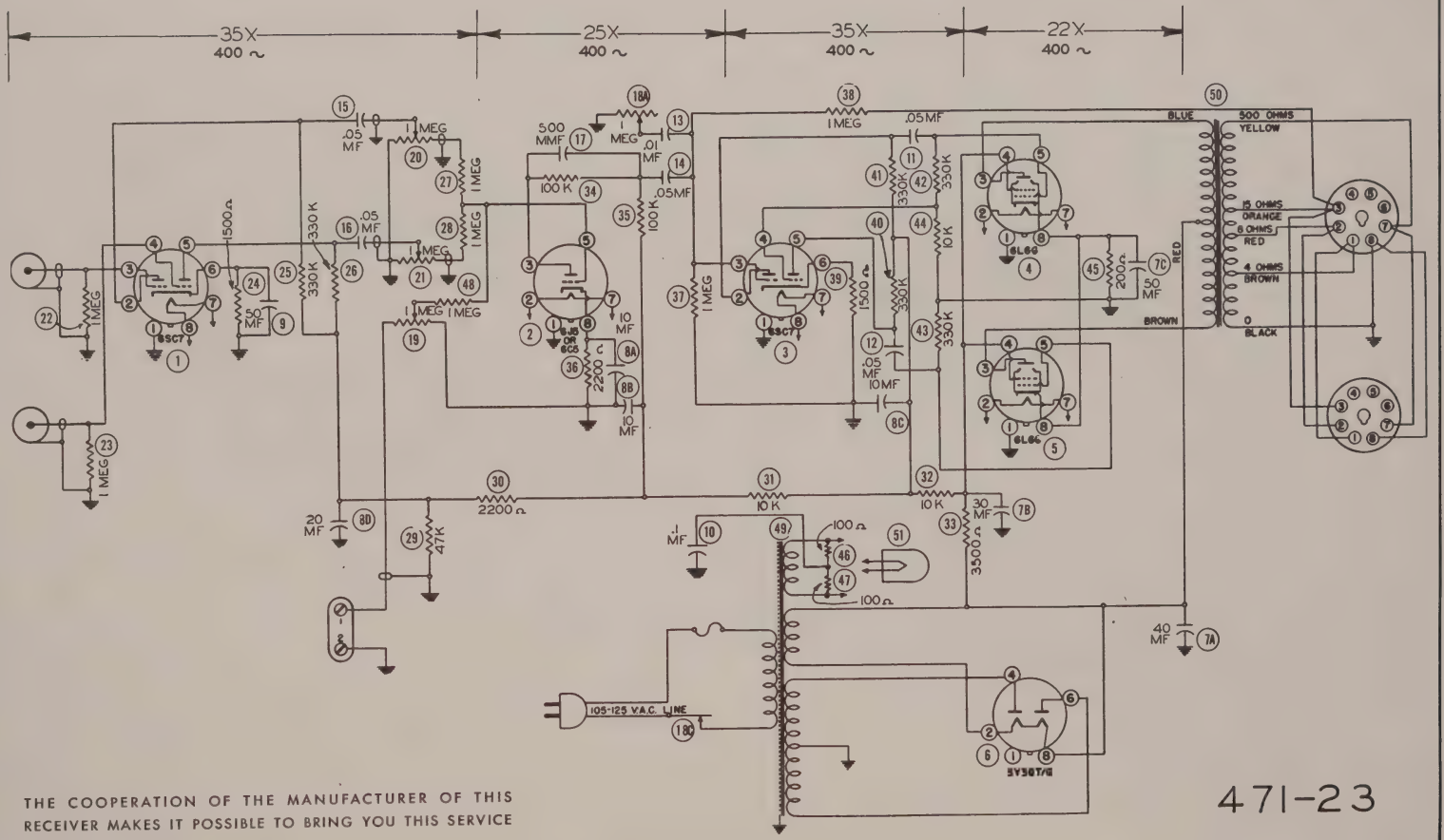
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					STROMBERG CARLSON PART No.		
51	Bayonet	6-8	0.2	White	2B00e		Type 81

CHASSIS—BOTTOM VIEW



STROMBERG-CARLSON MODEL 32

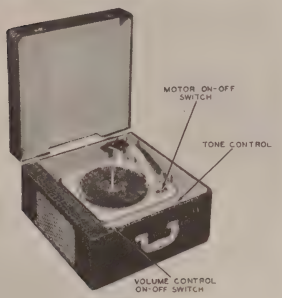
STROMBERG-CARLSON MODEL 32



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

471-23

MODEL 5135



MODEL 5140A

MODEL 5136

TELEQUIP MODELS 5135, 5136, 5140A

TRADE NAME Telequip, Models 5135, 5136, 5140A
MANUFACTURER Telequip Radio Co., 1901 S. Washtenaw Ave., Chicago, Ill.
TYPE SET Automatic record player with 4 tube amplifier and speaker
TUBES (FOUR) Types 12SN7GT AF Amp.-Phase Inverter, 2-12SN7GT Power Output 12SN7GT Rectifier

POWER SUPPLY 105-120 Volts AC RATING .355 Amp. @ 117 Volts AC

NOTE: ALL READINGS TAKEN FROM SWITCH ON VOLUME CONTROL UNLESS OTHERWISE NOTED.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SN7GT	0V.	32V.DC	1.8V.DC	20.5V.DC	90V.DC	28V.DC	94V.AC	82V.AC
2	12SN7GT	*0V.	*243V.DC	*9.1V.DC	*0V.	*243V.DC	*9.1V.DC	106V.AC	94V.AC
3	12SN7GT	*0V.	*245V.DC	*9.1V.DC	*0V.	*245V.DC	*9.1V.DC	82V.AC	69V.AC
4	12SN7GT	117V.AC	117V.AC	*245V.DC	*-8.6V.DC	*-8.6V.DC	117V.AC	106V.AC	118V.AC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SN7GT	1.9MEG.	260 KΩ	430Ω	85KΩ	85KΩ	46KΩ	212Ω	206Ω
2	12SN7GT	*510 KΩ	*100 KΩ	*440Ω	*510 KΩ	*100 KΩ	*440Ω	217Ω	212Ω
3	12SN7GT	*410 KΩ	*100 KΩ	*440Ω	*410 KΩ	*100 KΩ	*440Ω	206Ω	200Ω
4	12SN7GT	217Ω	217Ω	*120 KΩ	*430Ω	*430Ω	217Ω	217Ω	222Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

* READINGS TAKEN FROM JUNCTION OF 470KΩ GRID RESISTORS OF POWER OUTPUT TUBES (2&3).

1. DC Voltages measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		TELEQUIP PART No.	STANDARD REPLACEMENT		
1	AF Amp-Ph. Inv.	12SN7GT	12SN7GT	8BD	
2	Power Output	12SN7GT	12SN7GT	8BD	
3	Power Output	12SN7GT	12SN7GT	8BD	
4	Rectifier	12SN7GT	12SN7GT	8BD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	TELEQUIP PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	
5 A	40	150		DSB-2X40-150	TA-440	PRSA150-40-40	BRD4415	2N511	Filter
B	40	150							"
5 A	50	150		M-5030-150	TA-530	PRSA150-40-40	BRD3515	2N520	Filter - Red *
B	30	150							" - Green
6	40	150		M-40-150	UT-401	PRS150-40	BR4015	TC48	Filter
7	40	150		M-40-150	UT-401	PRS150-40	BR4015	TC48	"
8	.1	400		S-4-1	TC-1	484-.1	DT4P1	TP428	Line Isolation
9	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	Audio Coupling
10	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	" "
11	.01	400		S-4-01	TC-11	484-01	DT4S1	TP421	Tone Compensation
12	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	Audio Coupling
13	.1	400		S-4-1	TC-1	484-.1	DT4P1	TP428	Phono Isolation
14	500	500		MO.5-35	1FM-35	1468-0005	5W5T5	MC245	Audio Plate Bypass

* Used in some models

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	TELEQUIP PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
15A	2 Meg	1		MR55	D13-139	M-66-Z	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 15A Per Instr.
C	Switch			M26	41	SW-A	" " " "
16A	100KΩ	1		MR41	D11-128	M-49-S	Tone Control
B	Shaft			Not Req.	A	Not Req.	Attach to 16A Per Instr.
16A	50KΩ	1		MR35	D11-123	M-44-S	Tone Control See Note 1.
B	Shaft			Not Req.	A	Not Req.	Attach to 16A Per Instr.
16A	200KΩ	1		MR41	D11-129	M-52-S	Tone Control See Note 2.
B	Shaft			Not Req.	A	Not Req.	Attach to 16A Per Instr.

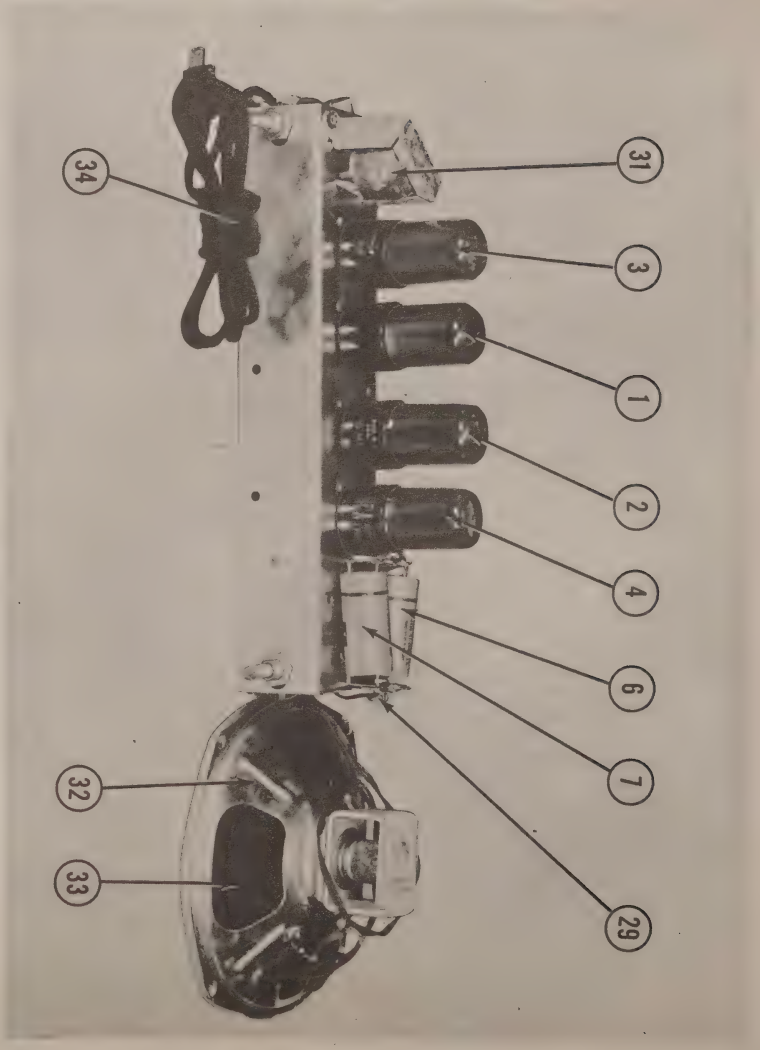
NOTE 1: Some models use 50KΩ tone control in place of 100KΩ tone control.

NOTE 2: Some models use 200KΩ tone control in place of 100KΩ tone control.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	TELEQUIP PART No.	IRC PART No.		
17	100KΩ	½		BTS-100K	Br - Blk - Yl	Phono Isolation
18	470Ω	½		BTS-470	Yl-- Vi - Br	AF Cathode
19	220KΩ	½		BTS-220K	Red - Red - Yl	AF Plate Load
20	40KΩ	1		BTA-39K	Yl - Blk - Or	Bleeder
21	47KΩ	½		BTS-47K	Yl - Vi - Or	Phase Inverter Grid

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	TELEQUIP PART No.	IRC PART No.		
22A	4700Ω	½		BTS-4700	Yl - Vi - Red	Phase Inverter Cathode Bias *
22B	5600Ω	½		BTS-5600	Grn - Blue - Red	Phase Inverter Cathode Bias †
23	47KΩ	½		BTS-47K	Yl - Vi - Or	Phase Inverter Cathode
24	47KΩ	½		BTS-47K	Yl - Vi - Or	Phase Inverter Plate Load
25	500KΩ	½		BTS-470K	Grn - Blk - Yl	Output Grid
26	500KΩ	½		BTS-470K	Grn - Blk - Yl	Output Grid
27	470Ω	½		BTS-470	Yl - Vi - Br	Output Cathode
28	2500Ω	½		BTS-2200	Red - Grn - Red	Filter
29	470Ω	½		BTS-470	Yl - Vi - Br	Filter
30A	220Ω	10		ABA-250		Line Dropping - See Note 1
30B	75Ω	20		DG-75		Line Dropping - See Note 2

* Used in model 5136
† Used in model 5135
Note 1: On IRC replacement, set slider 220Ω from one end. Used in Models 5135,5136.
Note 2: Model 5140A uses two 150Ω 10 watt resistors paralleled and a 220Ω line cord resistor.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TELEQUIP PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
31	2200Ω CT	3.7Ω	180Ω CT	.35Ω	S-12C-736	A-3876	T22874#		# Drill one new mounting hole

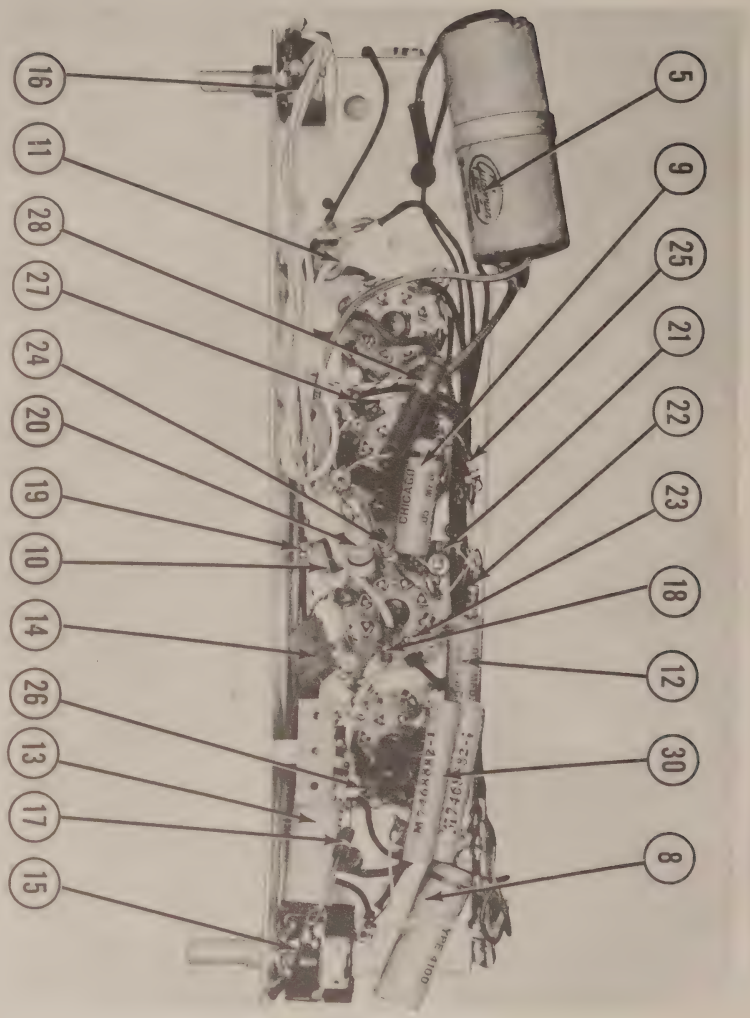
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TELEQUIP PART No.	JENSEN PART No.	UTAH PART No.	
32A	FIELD	V.C.IMP.		ST-107		Used in Models 5135, 5136
	PM	3.7Ω		MOD.P8-V		
33A	CONE DIA.	V.C.DIA.	NOT READILY REPLACEABLE - USE COMPLETE SPEAKER UNIT			
	4 3/4"	1.2"				
32B	FIELD	V.C.I.M.		ST-108		Used in Model 5140A
	PM	3.2Ω		MOD. P8-X		
33B	CONE Dia.	V.C.DIA.	NOT READILY REPLACEABLE - USE COMPLETE SPEAKER UNIT			
	8"	7/16"				

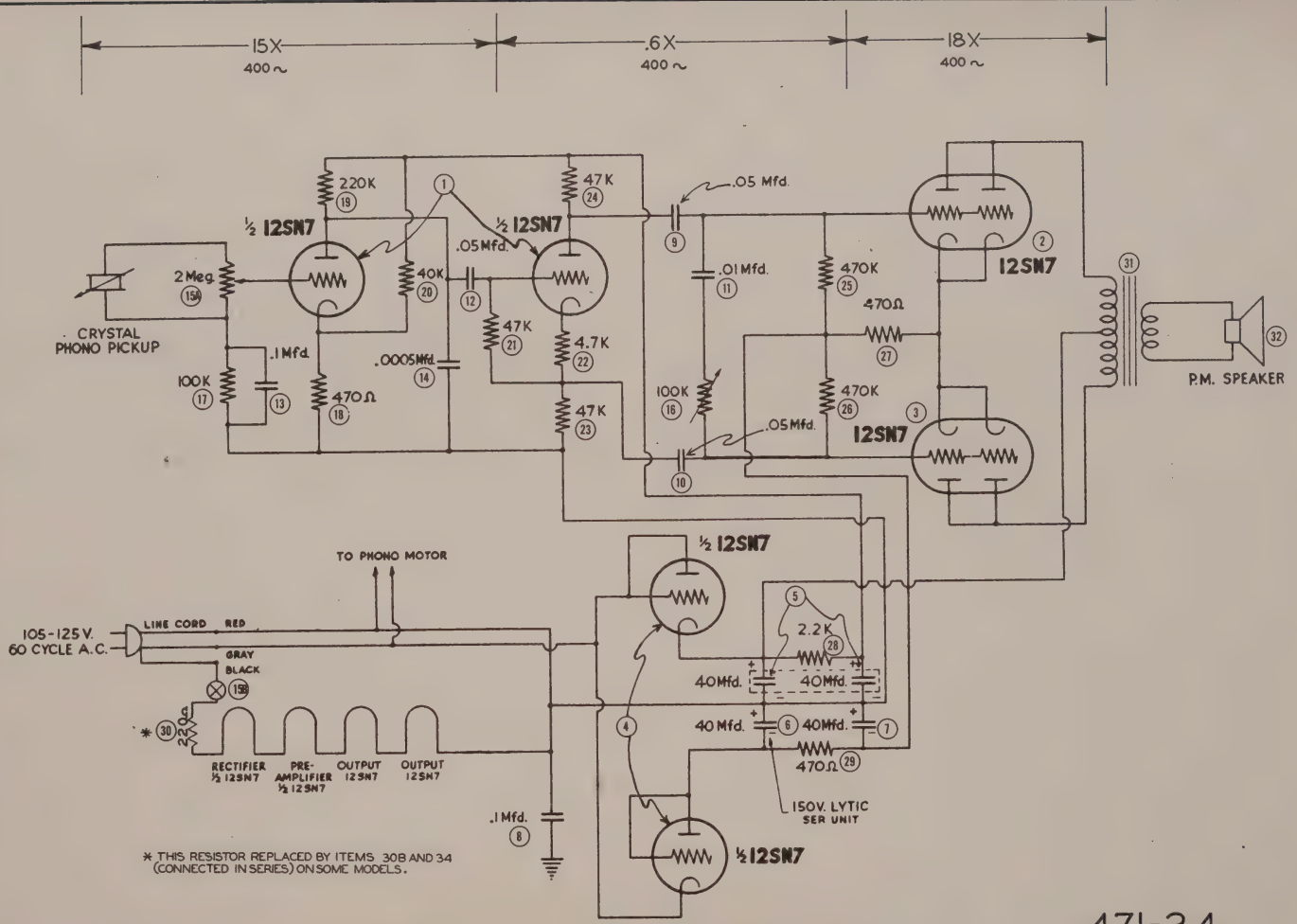
DISASSEMBLY INSTRUCTIONS

1. Remove the set-screw type control knobs.
2. Remove two hex-head lock nuts from the control shafts
3. On models 5135 and 5140A, remove five screws holding motor board to cabinet and turn motor board over to gain access to interior of cabinet.
4. Unsolder phono pick-up leads.
5. Unsolder phono motor leads.
6. Remove line cord from cabinet.
7. Remove speaker fasteners.
8. Remove entire assembly from cabinet.

CHASSIS—BOTTOM VIEW



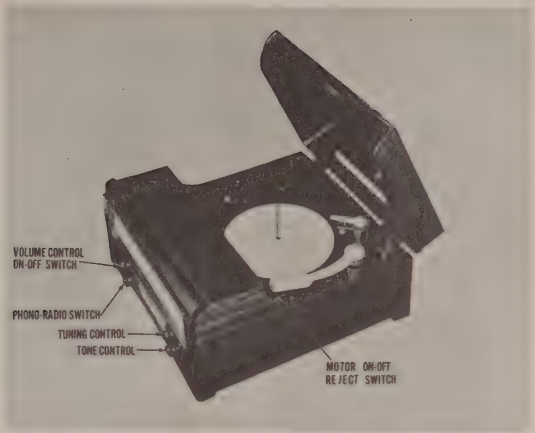
TELEQUIP MODELS 5135, 5136, 5140A



* THIS RESISTOR REPLACED BY ITEMS 30B AND 34 (CONNECTED IN SERIES) ON SOME MODELS.

471-24

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE



TELETONE
MODEL 133

TELETONE
MODEL 133

TELETONE MODEL 133

TRADE NAME	Teletone Model 133
MANUFACTURER	Teletone Radio Co., 609 W. 51st, New York, N.Y.
TYPE SET	AC Operated Combination Auto. Phono.-Superheterodyne Receiver with Self-Contained Loop Antenna
TUBES (EIGHT)	Types, 6SA7 Converter, 6SK7 IF Amp., 6SQ7GT Det.-AVC, 6SJ7GT 1st AF Amp., 6SJ7GT Phase Inverter, (2) 6K6GT Power Output, 6X5GT Rectifier.
POWER SUPPLY	117 Volts AC
TUNING RANGE—BROADCAST	530-1700KC RATING .370 Amps. @ 117 V AC

ALIGNMENT INSTRUCTIONS

To set pointer turn variable fully closed and set pointer to last index mark at left end of dial. Volume control should be at maximum and output of signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjustments.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator of rear section of variable. Low side to chassis.	455KC	Variable fully open	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
200 MMFD	High side to ext. ant. lead. Low side to ext. ground lead.	1500KC	"	"	A5	" " " "
200 MMFD	"	1500KC	Tune to maximum output.	"	A6	" " " "

DISASSEMBLY INSTRUCTIONS

1. Remove four control knobs from front panel.
2. Remove two screws holding small panel. Remove panel.
3. Remove six screws holding phono turntable mounting board.
4. Remove phono-pickup plug from chassis.
5. Disconnect phono motor plug.
6. Lift out turntable.
7. Remove three hex bolts holding chassis.
8. Slide chassis out and lift up.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: TELETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	6SA7	6SA7	8R	
2	IF Amp.	6SK7	6SK7	8N	
3	Det.-AVC	6SQ7GT	6SQ7GT	8Q	
4	1st AF Amp.	6SJ7GT	6SJ7GT	8N	
5	Phase Inverter	6SJ7GT	6SJ7GT	8N	
6	Power Output	6K6GT	6K6GT	7S	
7	Power Output	6K6GT	6K6GT	7S	
8	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TELETONE PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	15	300		DY-3x15-450§	†EL-253		†EZ1A135C	TN129	Filter - Brown
B	15	300							" - Yellow
C	15	300			EL-203		BR1635		" - Red White
10	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	Line Filter
11	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	" "
12	.02	400		S-4-02	TC-12	484-02	DT4S2	TP423	Audio Coupling
13	.02	400		S-4-02	TC-12	484-02	DT4S2	TP423	" "
14	.1	200		S-4-1	TC-1	484-.1	DT4P1	TP428	Audio Screen Bypass
15	.1	200		S-4-1	TC-1	484-.1	DT4P1	TP428	6SJ7 Screen Bypass
16	.002	600		S-6-002	TC-22	684-002	DT6D2	TP405	Audio Coupling
17	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	Screen Bypass
18	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	AVC Filter
19	.1	200		S-4-1	TC-1	484-.1	DT4P1	TP428	Tone Compensation
20	150	500		M0.5-315	1FM-315	1468-00015	5W5T15	MC236	IF Bypass Diode
21	150	500		M0.5-315	1FM-315	1468-00015	5W5T15	MC236	IF Bypass Vol. Cont.

†Do not use bypass section.
§Use mounting clip.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELETONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22A	500KΩ	1	A-VC-1	MR48#	D13-133#	M-60-Z#	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 22A per instructions
C	Switch		" "	426	41	SW-A	" " " " "
23A	20KΩ	1	C-VC-1	MR28	D16-119		Tone Control
B	Shaft		Not Req.	Not Req.	A		Attach to 23A per instructions

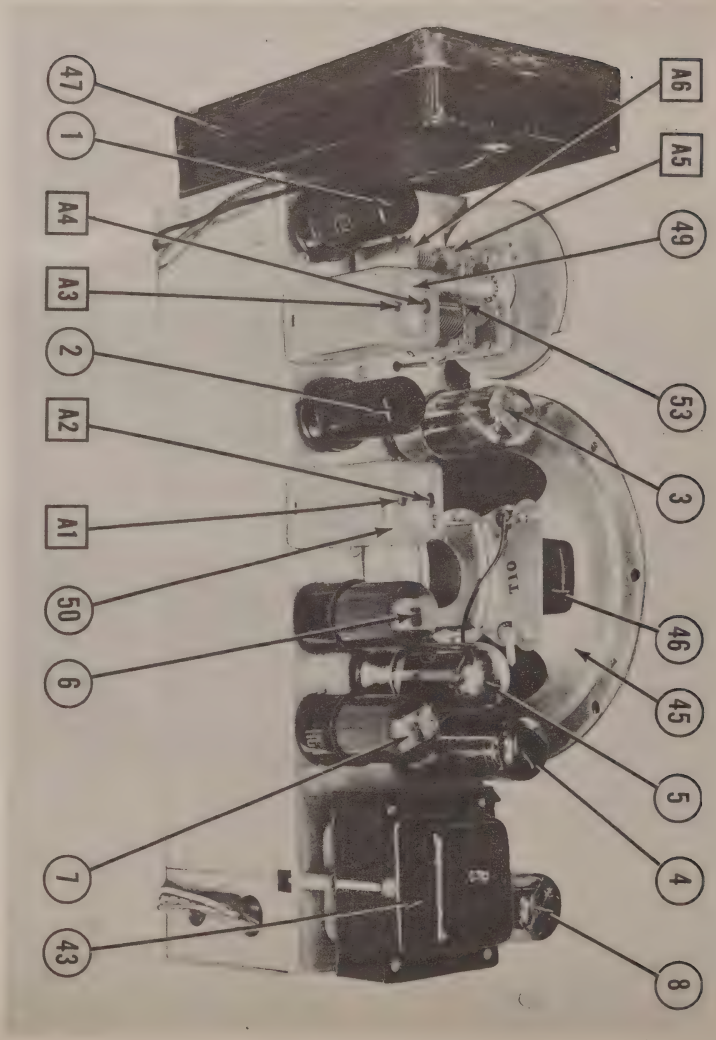
#Install a 47KΩ resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control. (Control viewed from shaft side, terminals down.)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELETONE PART No.	IRC PART No.	IDENTIFICATION CODES
24	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
25	10KΩ	2		BT-2-10K	Br.-Blk.-Or. Screen Dropping
26	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
27	330KΩ	½		BTS-330K	Or.-Or.-Yl. Phono Shunt
28	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
29	180Ω	½		BW-½-180	Br.-Gray-Br. 1st AF Cathode
30	220KΩ	½		BTS-220K	Red-Red-Yl. 1st AF Plate Load
31	1.5 Meg.	½		BTS-1.5 Meg.	Br.-Grn.-Grn. 1st AF Screen Dropping
32	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Phase Inverter Grid
33	1000Ω	½		BTS-1000	Br.-Blk.-Red " " Cathode
34	220KΩ	½		BTS-220K	Red-Red-Yl. Phase Inverter Plate Load
35	1.5 Meg.	½		BTS-1.5 Meg.	Br.-Grn.-Grn. Phase Inverter Screen Dropping
36	330KΩ	½		BTS-330K	Or.-Or.-Yl. Output Grid
37	330KΩ	½		BTS-330K	Or.-Or.-Yl. " "
38	1000Ω	1		BTA-1000	Br.-Blk.-Red Output Cathode
39	390Ω	2		BW-2-390	Or.-White-Br. Filter
40	2200Ω	2		BT-2-2200	Red-Red-Red "
41	1500Ω	½		BTS-1500	Br.-Grn.-Red Tone Compensation
42	47KΩ	½		BTS-47K	Yl.-Vl.-Or. Series Volume Control-See Note 1

Note 1 - Not used in all models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	TELETONE PART No.	STANCOR PART No.	THORDARSON PART No.	
43	117VAC @ .37A	480VAC @ .048A	5.7VAC @ 3.1A		C-TR2		T22R01	

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TELETONE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
44	16000Ω CT	3.4Ω	500Ω CT	.4Ω	C-RT1	A-3842†	T22S48		† Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TELETONE PART No.	JENSEN PART No.		
45	FIELD PM	VC IMP. 3.4Ω	C-SP1	ST-10S* Mod. P8-X		*Drill new mounting holes.
46	CONE DIA. 6-1/8"	VC DIA. 1/2"	CONE HAS SPECIAL ADJUSTMENT FEATURE - ORDER FROM MANUFACTURER.			

R F COILS

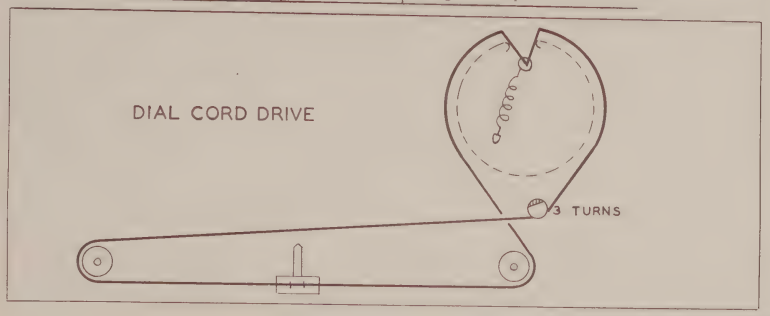
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	TELETONE PART No.	MEISSNER PART No.	
47	Loop Ant.	.2Ω	3Ω			
48	Osc. Coil	.5Ω	6Ω	A-LC-1	14-1434	
49	Input IF	21Ω	21Ω	C-LF-1	16-6658	
50	Output IF	16.5Ω	16.5Ω	C-LF-2	16-6660	

DIAL LIGHT

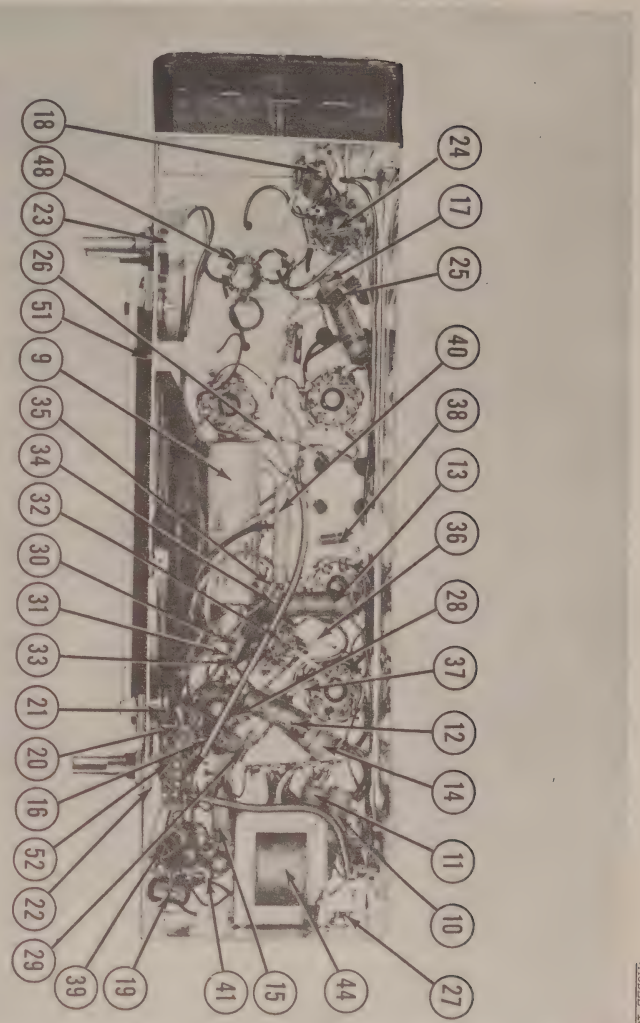
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					TELETONE PART No.		
51	Bayonet	6-8	0.15	Brown			Type 47

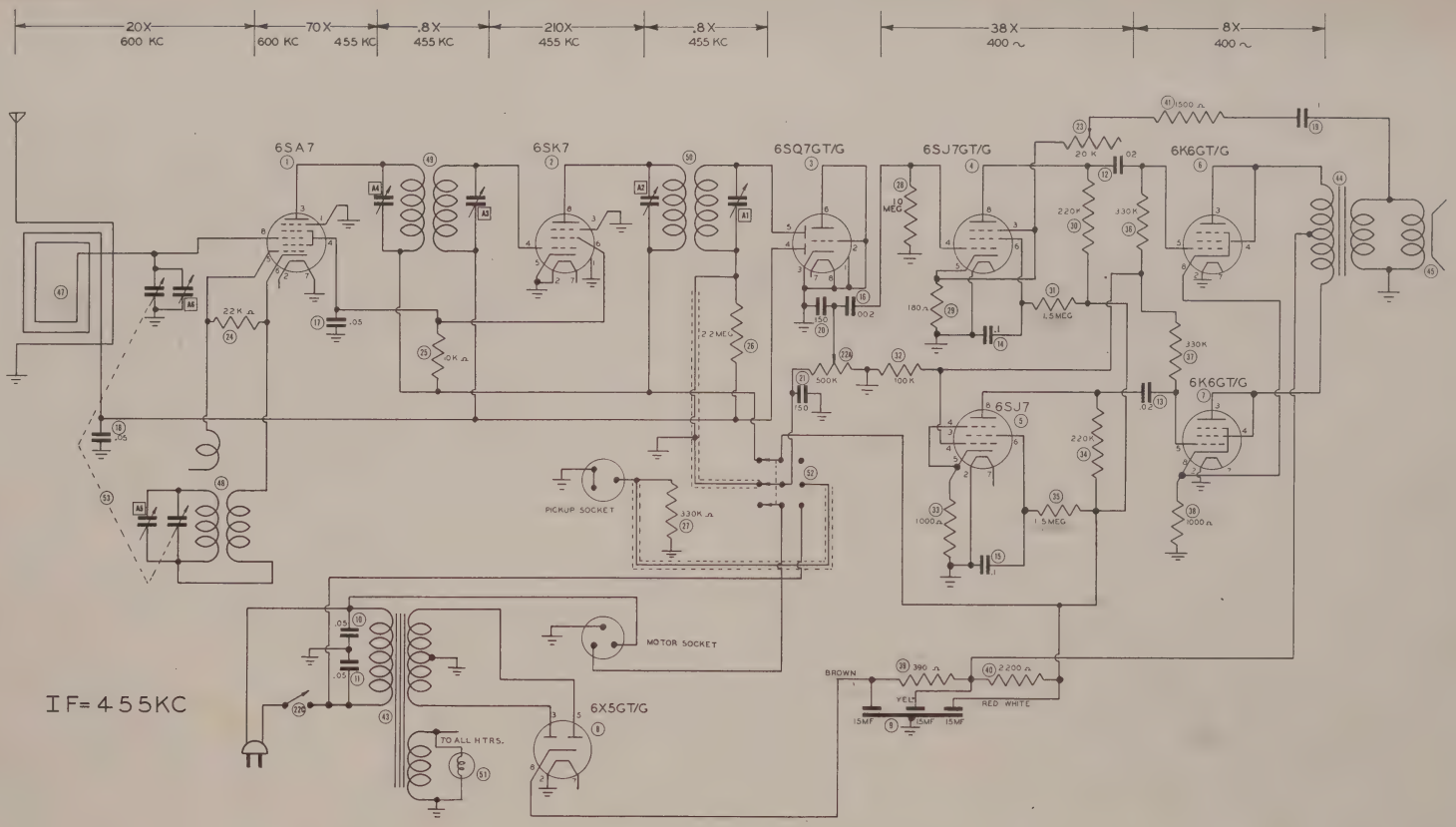
MISCELLANEOUS

ITEM No.	PART NAME	TELETONE PART No.	NOTES
52	Switch		Radio-Phono
53	Tuning Cap.		2 Gang Var. Cap.



CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SA7	0V.	6.7 V.AC	190 V.DC	87 V.DC	-5.7 V.DC	0V.	0V.	-.8 V.DC
2	6SK7	0V.	0V.	0V.	-.8 V.DC	0V.	87 V.DC	6.7 V.AC	190 V.DC
3	6SQ7GT	0V.	0V.	0V.	-.8 V.DC	-.4 V.DC	0V.	6.7 V.AC	0V.
4	6SJ7GT	0V.	0V.	.2 V.DC	-.8 V.DC	.2 V.DC	24 V.DC	6.7 V.AC	105 V.DC
5	6SJ7GT	0V.	0V.	.2 V.DC	0V.	.2 V.DC	17 V.DC	6.7 V.AC	85 V.DC
6	6K6GT	0V.	0V.	260 V.DC	260 V.DC	0V.	0V.	6.7 V.AC	27 V.DC
7	6K6GT	0V.	0V.	260 V.DC	260 V.DC	0V.	0V.	6.7 V.AC	27 V.DC
8	6X5GT	0V.	0V.	240 V.AC	0V.	240 V.AC	0V.	6.7 V.AC	280 V.DC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SA7	0Ω	0Ω	210KΩ	220KΩ	19KΩ	.8Ω	0Ω	2.2MEG.
2	6SK7	0Ω	0Ω	0Ω	2.2MEG.	0Ω	220KΩ	0Ω	210KΩ
3	6SQ7GT	0Ω	0Ω	0Ω	2.2MEG.	430KΩ	0Ω	0Ω	0Ω
4	6SJ7GT	0Ω	0Ω	170Ω	6 MEG.	170Ω	1.7MEG.	0Ω	410KΩ
5	6SJ7GT	0Ω	0Ω	1KΩ	90KΩ	1KΩ	1.7MEG.	0Ω	410KΩ
6	6K6GT	INF.	0Ω	210KΩ	210KΩ	370KΩ	INF.	0Ω	1KΩ
7	6K6GT	INF.	0Ω	210KΩ	210KΩ	370KΩ	INF.	0Ω	1KΩ
8	6X5GT	0Ω	0Ω	130Ω	INF.	140Ω	INF.	0Ω	210KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

471-25

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

TEMPLE
MODEL E-511

TEMPLE
MODEL E-511

TEMPLE MODEL E-511

TRADE NAME	Temple, Model E-511
MANUFACTURER	Templetone Radio Mfg. Corp., New London, Conn.
TYPE SET	AC Operated Radio - Phonograph Combination Superheterodyne Receiver - Self Contained Loop Antenna
TUBES (FIVE)	Types, 12SA7GT Converter, 12SK7 IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1600KC RATING .235 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS

To set pointer, turn variable fully closed and set pointer to last mark on right of dial backplate. Use isolation transformer if available. If not, connect a capacitor in series with low side of signal generator and chassis. Volume control should be at maximum and output of signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjustments.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.01 MFD.	High side to stator of rear section of variable. Low side to chassis.	455KC	Variable fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
	Loop	1650KC	"	"	A5	Using a loop of few turns of wire, placed about a foot away from receiver loop, radiate signal into receiver loop and adjust for maximum output.
	"	1550KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: TEMPLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TEMPLE PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	80	150	CE78	DSB-804020-150	TA-4401† TA-240		E25321SC	2N511† 2N514	Filter - Red " - Blue Cath. Bypass - Green
7	.1	400		S-4-1	TC-1	484-.1	DT4F1	TP428	Line Filter
8	.02	600	164.003	S-6-02	TC-12	684-02	DT6S2	TP412	Output Plate Bypass
9	.005	600	164.009	S-6-005	TC-25	684-005	DT6D5	TP408	Audio Coupling
10	.005	600	164.009	S-6-005	TC-25	684-005	DT6D5	TP408	" "
11	.1	400		S-4-1	TC-1	484-.1	DT4F1	TP428	AVC Filter
12	.005	600	164.009	S-6-005	TC-25	684-005	DT6D5	TP408	Ant. Coupling
13	.1	400		S-4-1	TC-1	484-.1	DT4F1	TP428	RF Bypass Pwr. Supp.
14	.05	400	164.004	S-4-05	TC-15	484-05	DT4S5	TP426	IF Cath. Bypass
15	.005	600	164.009	S-6-005	TC-25	684-005	DT6D5	TP408	Tone Compensation
16	100	500	162.522	MO.5-31	1FM-31	1468-0001	5W5T1	MC235	Audio Plate Bypass
17	100	500	162.522	MO.5-31	1FM-31	1468-0001	5W5T1	MC235	Osc. Grid Capacitor
18	10	500	162.580	MO.5-41	1FM-41	1468-00001	5W5Q1	MC215	Fixed Trimmer

†Parallel sections to obtain desired capacity.

CONTROLS

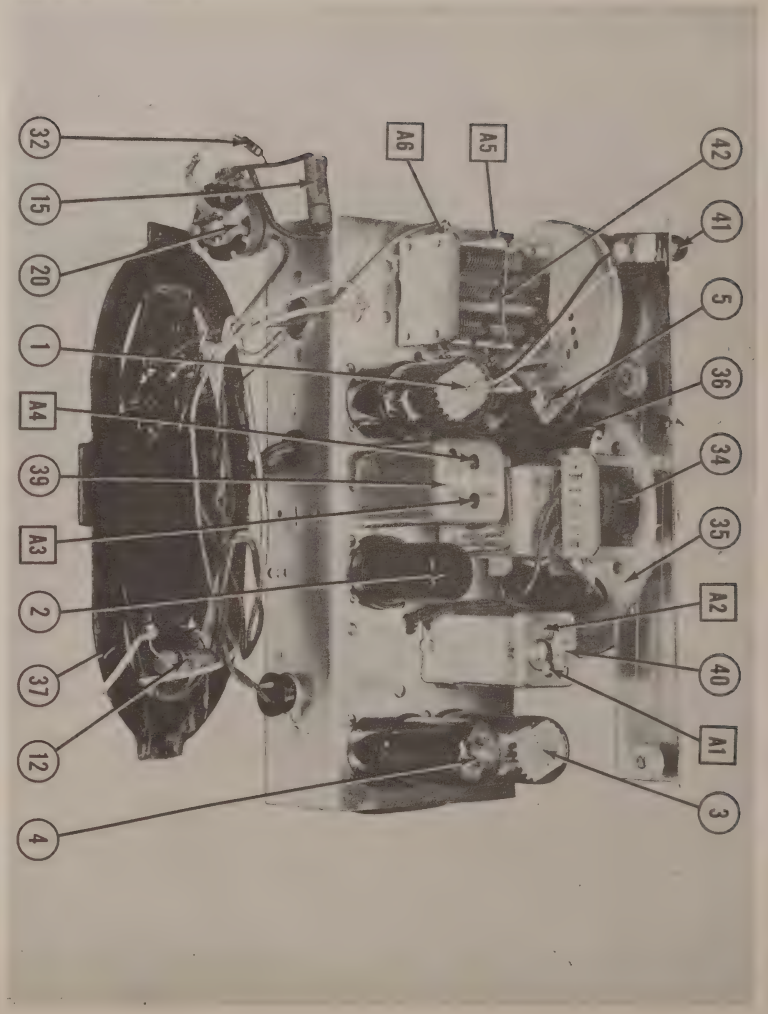
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TEMPLE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19A	500KΩ	1	650.504E	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 19A per instructions.
C	Switch		" "	M26	41	SW-A	" " " " "
20A	500KΩ	1	650.504J	MR48	D13-133	M-60-Z	Tone Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 20A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TEMPLE PART No.	IRC PART No.	IDENTIFICATION CODES
21	22KΩ	½	605.2231	BTS-22K	Red-Red-Or. Oscillator Grid
22	6.8 Meg.	½	605.6851	BTS-6.8 Meg.	Blue-Gray-Grn. AVC Network-See Note 1
23	2.2 Meg.	½	605.2251	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
24	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid-See Note 2
25	220KΩ	½	605.2241	BTS-220KΩ	Red-Red-Yl. 1st AF Plate Load
26	470KΩ	½	605.4741	BTS-470KΩ	Yl.-Vi.-Yl. Output Grid
27	47Ω	1		BW-1-47	Yl.-Vi.-Blk. Output Cathode
28	100Ω	1		BW-1-100	Br.-Blk.-Br. Output Cathode
29	1000Ω	1	601.1021	BTA-1000	Br.-Blk.-Red Filter
30	120Ω	½	601.1211	BW-½-120	Br.-Red-Br. " - See Note 1
31	100Ω	1		BW-1-100	Br.-Blk.-Br. Rectifier Ballast
32	22KΩ	½	605.2231	BTS-22K	Red-Red-Or. Phono Audio Voltage Divider
33	150KΩ	½		BTS-150K	Br.-Grn.-Yl. Diode Load

Note 1 - Not used in all models.
Note 2 - Some models use a 10 Meg. Ω resistor in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TEMPLE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
34	1560Ω	3.2Ω	153Ω	.5Ω	851.514	A-3876*	T14582		*One new mounting hole required.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TEMPLE PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-136		
35	PM	3.2Ω	780.008	Mod. P5-W		
	CONE DIA.	VC DIA.				
36	4-5/8"	1/2"	NOT READILY REPLACEABLE - USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	TEMPLE PART No.	MEISSNER PART No.	
37	Loop Ant.	.1Ω	2Ω	251.145		
38	Osc. Coil		7Ω	251.143	14-1640	
39	Input IF	15.5Ω	15.5Ω	251.146	16-6658	
40	Output IF	14.5Ω		251.147	16-6670	

DIAL LIGHT

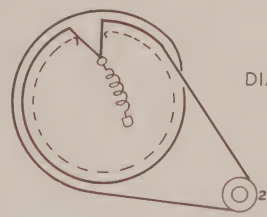
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					TEMPLE PART No.		
41	Bayonet	6-8	0.2	White			Type 51

MISCELLANEOUS

ITEM No.	PART NAME	TEMPLE PART No.	NOTES
42	Radio-Phono Sw.	601.507	DPDT
43	2 Gang Var. Cap	165.513	Ant. & Osc. Trimmers Incl.
	Crystal Cart.	EM-6	
	Dial Scale	ND-11	
	Pointer	591.005	

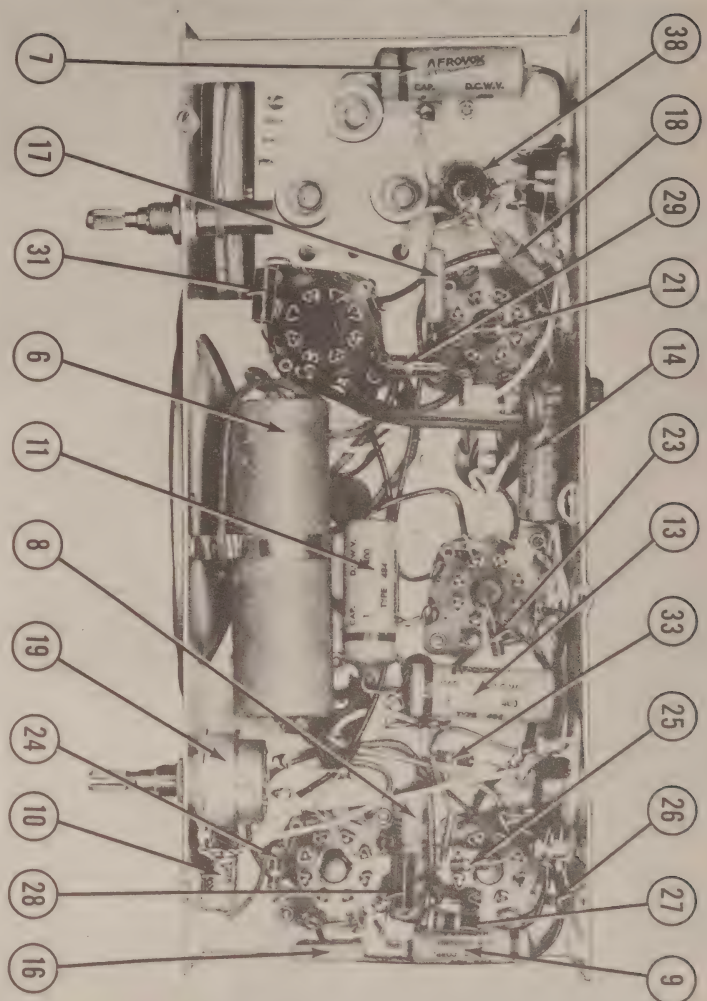
DISASSEMBLY INSTRUCTIONS

1. Remove seven Phillips head screws holding top panel. Lift up panel.
2. Remove set screw on tone control, motor on-off switch knob. Remove knob.
3. Remove lock nut on tone control motor on-off switch control. Remove control.
4. Remove plug to phono switch from chassis.
5. Remove plug to phono motor switch from chassis.
6. Remove two knobs from controls at front of radio.
7. Remove three screws holding chassis.
8. Remove chassis and loop.



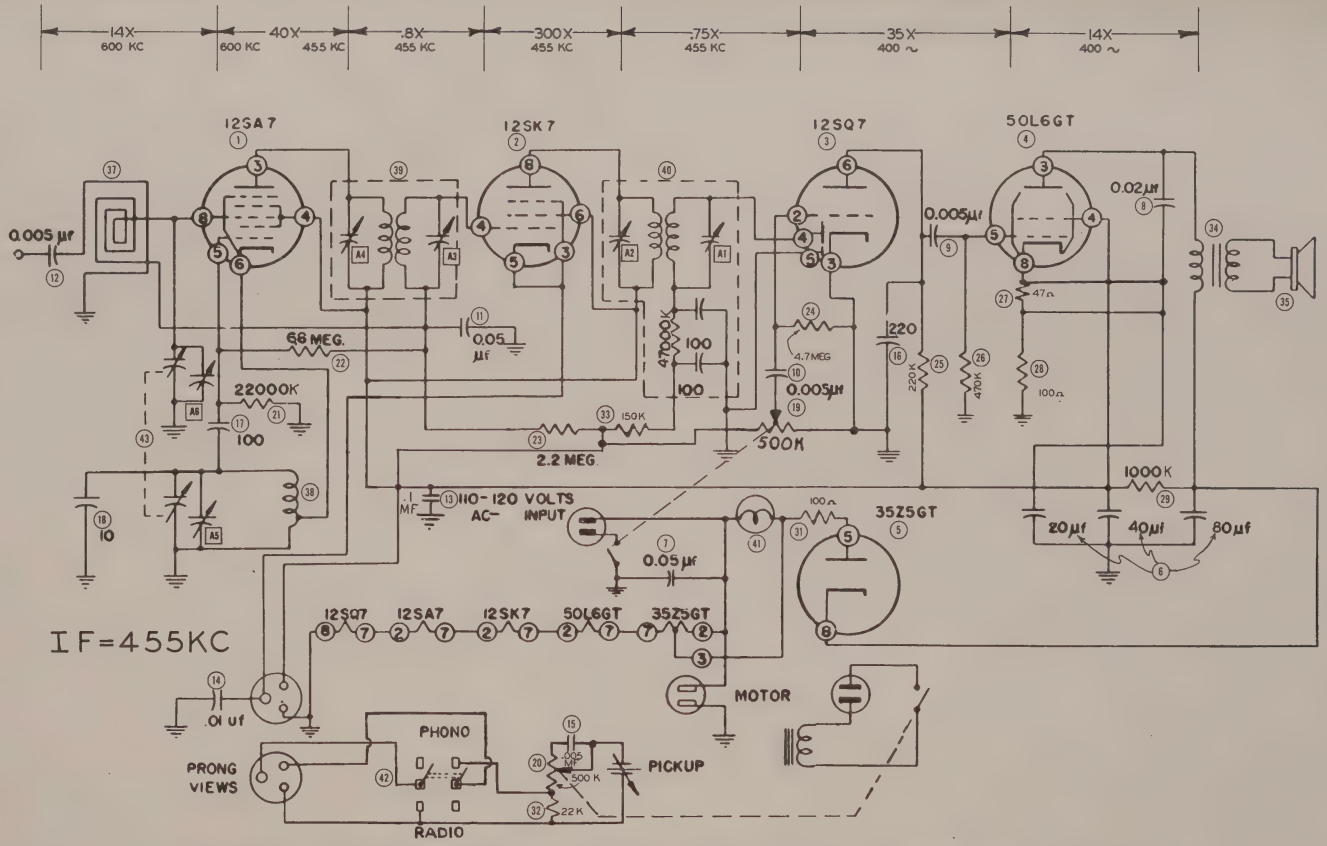
DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



TEMPLE MODEL B-611

TEMPLE MODEL B-611



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	111V.AC	80V.DC	80V.DC	-6.2V.DC	0V.	241V.AC	-2V.DC
2	12SK7	0V.	241V.AC	-2V.DC	-2V.DC	0V.	80V.DC	371V.AC	80V.DC
3	12SQ7GT	0V.	-1V.DC	0V.	-5V.DC	0V.	65V.DC	0V.	111V.AC
4	50L6GT	3.9V.DC	371V.AC	100V.DC	80V.DC	0V.	0V.	90V.AC	5.5V.DC
5	35Z5GT	0V.	117V.AC	115V.AC	0V.	108V.AC	0V.	90V.AC	105V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0Ω	12Ω	35KΩ	35KΩ	20KΩ	.5Ω	23Ω	2.5MEG.
2	12SK7	0Ω	23Ω	2.5MEG.	2.5MEG.	0Ω	35KΩ	34Ω	35KΩ
3	12SQ7GT	0Ω	4 MEG.	0Ω	650KΩ	0Ω	250KΩ	0Ω	12Ω
4	50L6GT	95Ω	34Ω	35KΩ	35 Ω	420KΩ	INF.	76Ω	135Ω
5	35Z5GT	0Ω	100Ω	98Ω	INF.	190Ω	INF.	76Ω	35KΩ

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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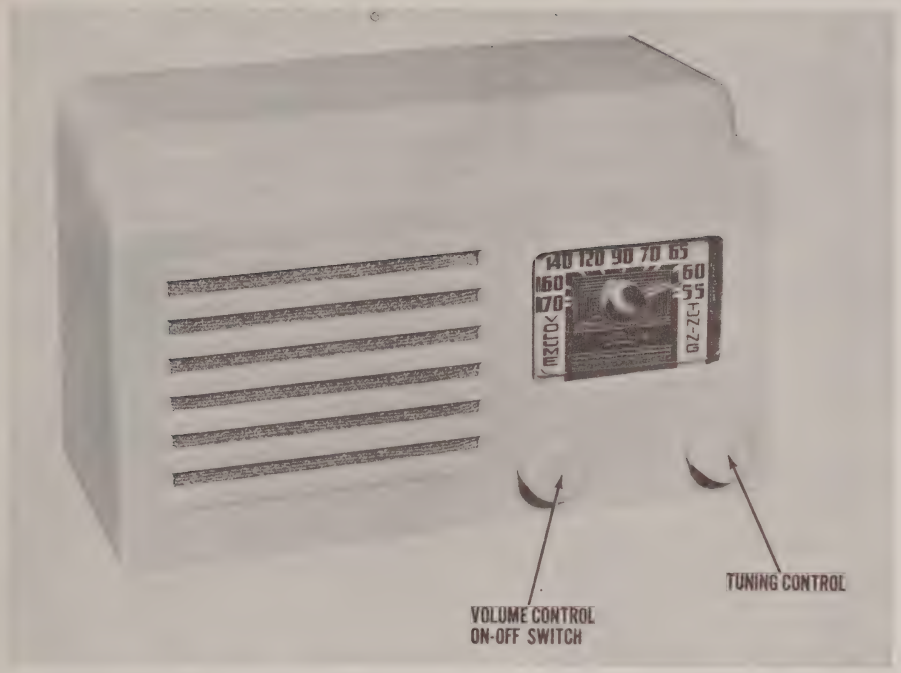
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



TRAV-LER MODEL 5000I

TRADE NAME	Trav-ler Models 5000, 5000I
MANUFACTURER	Trav-ler Karenola Radio & Tel. Corp., 571 W. Jackson, Chicago, Ill.
TYPE SET	AC-DC Operated Superheterodyne Receiver - Self Contained Loop Antenna
TUBES (FIVE)	Types, 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier or Types 12BE6, 12BA6, 12AT6, 50B5, 35W4 Respectively.
POWER SUPPLY RATING	110-125 Volts AC-DC .235 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1720KC

ALIGNMENT INSTRUCTIONS

To set pointer, turn variable fully closed and set pointer at last reference mark at low frequency end of dial. Use isolation transformer if available, if not connect capacitor in series with low side of signal generator and B-. Volume control should be at maximum volume and output of signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator of rear section of variable. Low side to B-.	455KC	High frequency end.	Across voice coil.	A1,A2, A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 to reduce hum modulation.
.1 MFD.	"	1720KC	"	"	A5	"
200 MMFD	High side to external ant. lead. Low side to B-.	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: TRAV-LER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1A	Converter	12SA7GT	12SA7GT	6AD	
B	Converter	12BE6	12BE6	7CH	
2A	IF Amp.	12SK7GT	12SK7GT	6K	
B	IF Amp.	12BA6	12BA6	7CC	
3A	Det.-AVC-AF	12SQ7GT	12SQ7GT	6Q	
B	Det.-AVC-AF	12AT6	12AT6	7BT	
4A	Power Output	50L6GT	50L6GT	7AC	
B	Power Output	50B5	50B5	7BZ	
5A	Rectifier	35Z5GT	35Z5GT	6AU	
B	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRAV-LER PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	EC-3	M-2X40-150	TA-240	PRSA150-40-40	BRD4215	2N514	Filter-Red
B	20	150							" -White
7	.05	400	PC-5	S-4-05	TC-15	484-05	DT4S5	TP426	Line Filter
8	.01	400	PC-7	S-4-01	TC-11	484-01	DT4S1	TP421	Output Plate Bypass
9	.01	400	PC-7	S-4-01	TC-11	484-01	DT4S1	TP421	Audio Coupling
10	.01	400	PC-7	S-4-01	TC-11	484-01	DT4S1	TP421	" "
11	.05	400	PC-5	S-4-05	TC-15	484-05	DT4S5	TP426	AVC Filter
12	.1	400	PC-9	S-4-1	TC-1	484-.1	DT4P1	TP428	Line Isolation
13	.01	400	PC-7	S-4-01	TC-11	484-01	DT4S1	TP421	Ant. Coupling
14	500	500	MC-5	M0.5-35	1F1-45	1468-0005	SW5T5	MC245	Audio Plate Bypass
15	100	500							IF Bypass Diode Cer.
16	39	500							Osc. Grid Capacitor Cer.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	500KΩ	1		MR48	D13-133	M-60-Z	Volume Control. See Note 1
B	Shaft			Not Req.	A	Not Req.	Attach to 17A per instructions
C	Switch			M26	41	SW-A	" " " " "
17A	1 Meg.	1		MR53	D13-137	M-63-Z	Volume Control See Note 2
B	Shaft			Not Req.	A	Not Req.	Attach to 17A per instructions
C	Switch			M26	41	SW-A	" " " " "

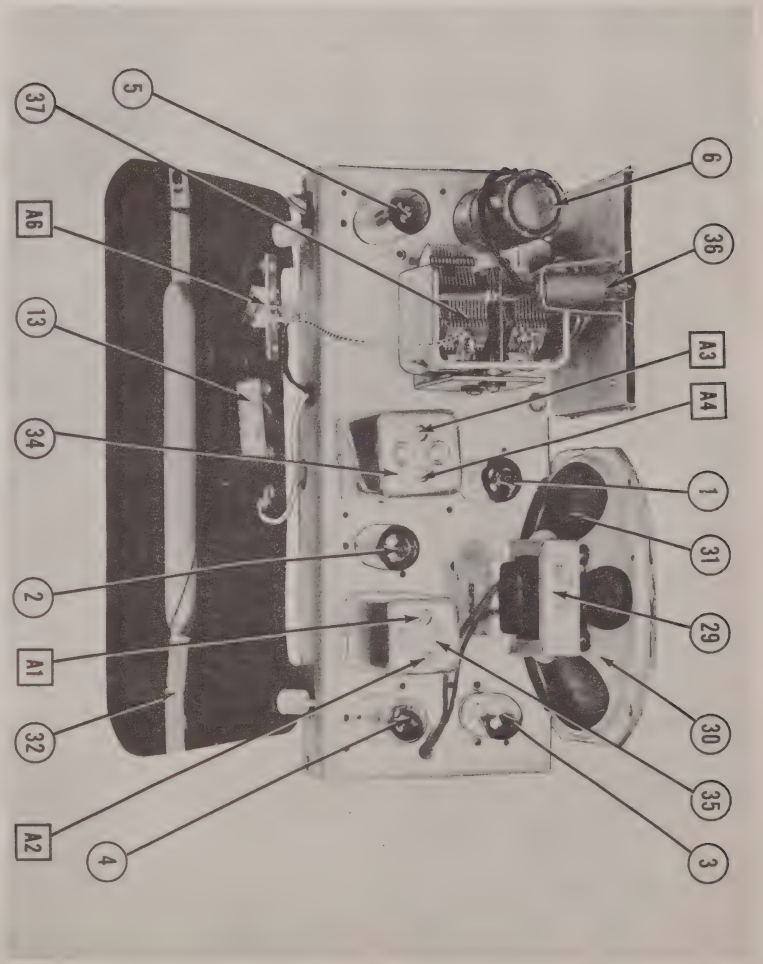
Note 1 - Used in later production.
Note 2 - Used in early production.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	IRC PART No.	IDENTIFICATION CODES
18	33KΩ	½	IR-16	BTS-33K	Or.-Or.-Or. Oscillator Grid
19	2 Meg.	½	IR-13	BTS-2.2 Meg.	Red-Blk.-Grn. AVC Network
20	2 Meg.	½	IR-13	BTS-2.2 Meg.	Red-Blk.-Grn. 1st AF Grid
21	510KΩ	½		BTS-470K	Grn.-Br.-Yl. " " Plate Load
22	510KΩ	½		BTS-470K	Grn.-Br.-Yl. Output Grid
23	150Ω	½	IR-15	BW-½-150	Br.-Grn.-Br. " Cathode
24	39Ω	½		BW-½-150	Or.-White-Blk. Rectifier Ballast
25	1500Ω	1		BTA-1800	Br.-Gray-Red Filter
26	39Ω	½		BW-½-39	Or.-White-Blk. Parasitic Suppressor
27	100Ω	½		BW-½-100	Br.-Blk.-Br. IF Cathode
28	47KΩ	½		BTS-47K	Yl.-Vi.-Or. RF Filter‡

‡Used only on models using 500KΩ volume control.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRAV-LER PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
29	2040Ω	2.6Ω	149Ω	.8Ω	Part of SPK-4	A-3878*	T-22848*		* Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TRAV-LER PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-138		
30	PM	2.5Ω	SPK-4	Mod.15-A		
	CONE DIA.	VC DIA.				
31	4-3/16"	1 2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

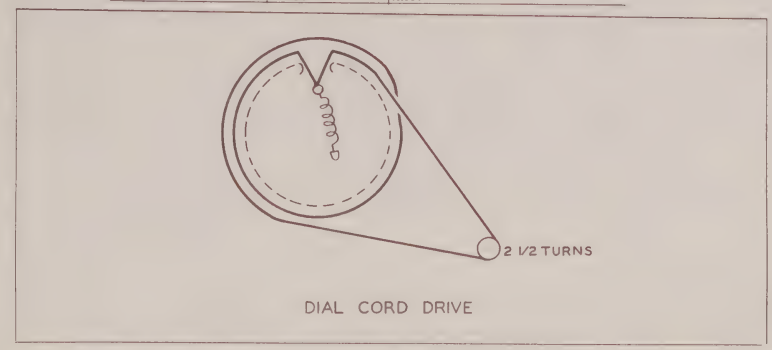
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	TRAV-LER PART No.	MEISSNER PART No.	
32	Loop Ant.	.1Ω	1.5Ω	LL-1		
33	Osc. Coil		7.5Ω	LO-2		
34	Input IF	19Ω	18Ω	LI-1	16-6666	
35	Output IF	20.5Ω	18Ω	LI-2	16-6557	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					TRAV-LER PART No.		
36	Bayonet	6-8	0.16	Brown	PB-1		Type 47

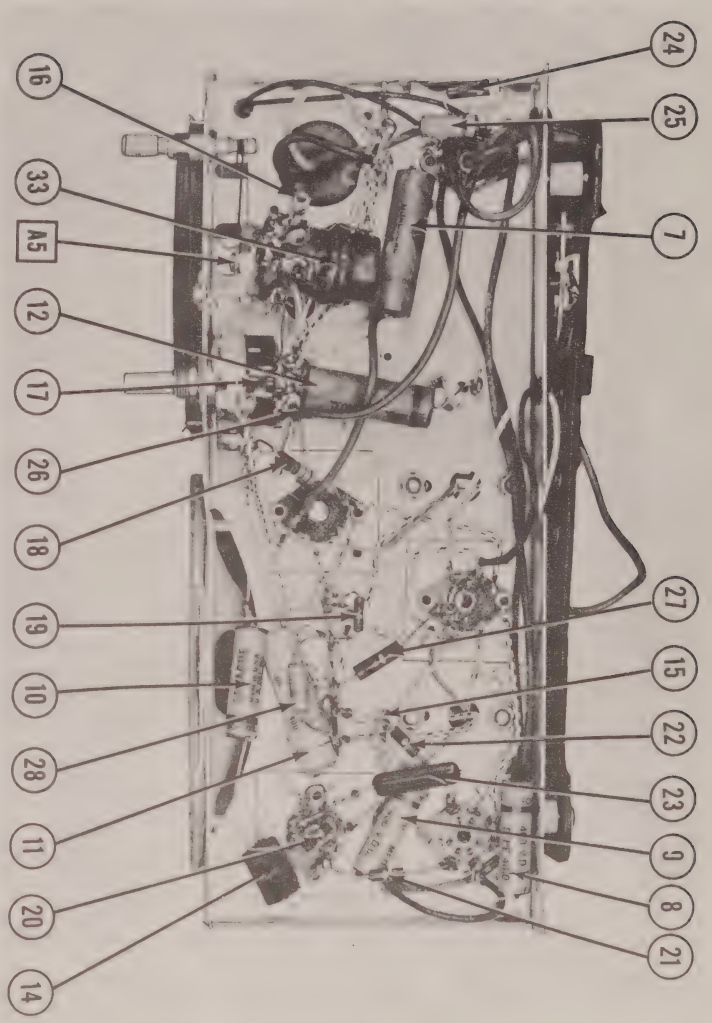
MISCELLANEOUS

ITEM No.	PART NAME	TRAV-LER PART No.	NOTES
37	2 Gang Var. Cap.	C-2	
A5	Trimmer	TC-6	Osc. Adjustment
A6	"	TC-7	Ant. "

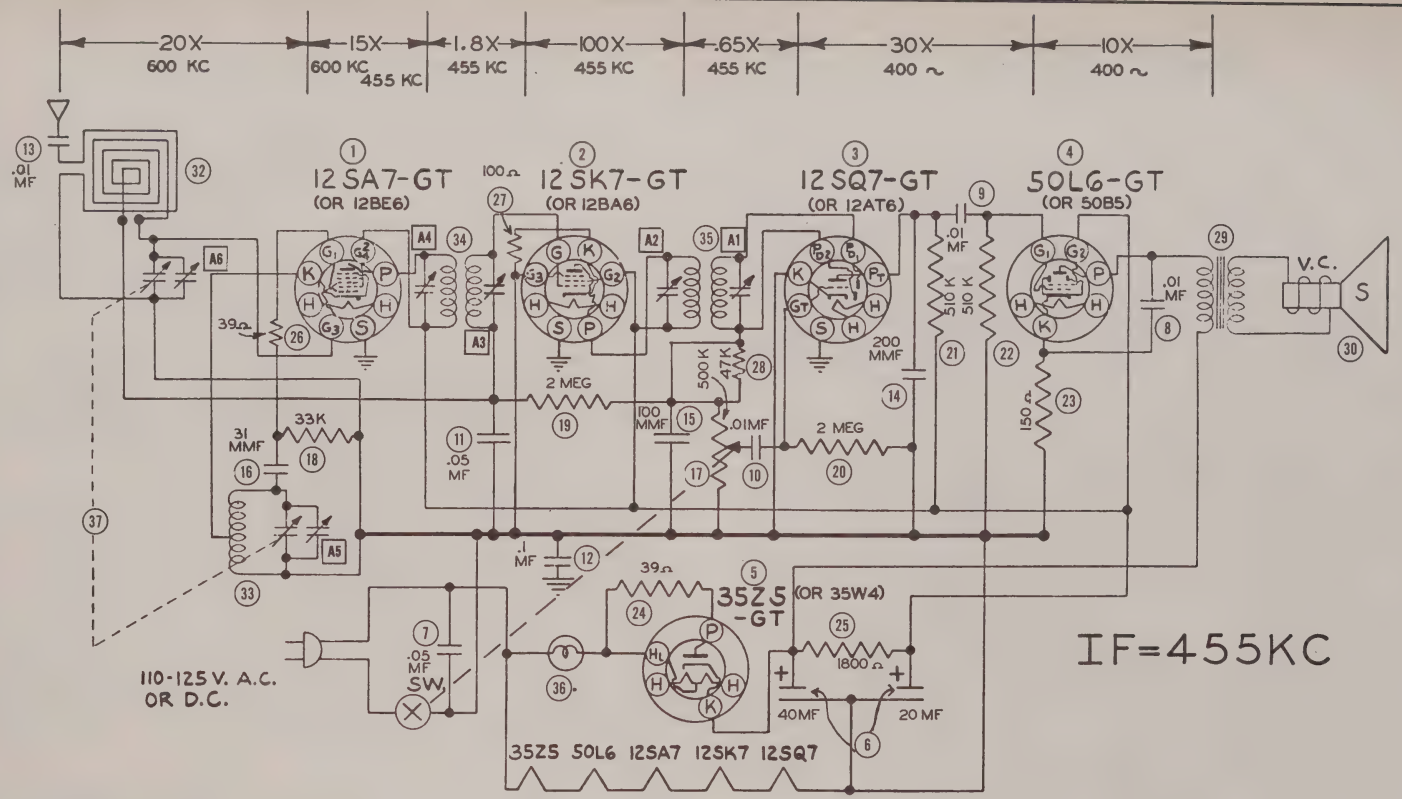


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



TRAV-LER MODELS 5000, 5000A



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	0V.	0V.	23V.AC	11V.AC	70V.DC	70V.DC	0V.
2	12BA6	0V.	0V.	23V.AC	37V.AC	70V.DC	70V.DC	-9V.DC
3	12AT6	-5V.DC	0V.	11V.AC	0V.	-.7 V.DC	-.7 V.DC	31V.DC
4	50B5	0V.	4.4V.DC	37V.AC	90V.AC	117V.DC	70V.DC	0V.
5	35W4	0V.	0V.	90V.AC	117V.AC	103V.AC	105V.AC	116V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	31KΩ	.8Ω	23Ω	13Ω	40KΩ	40KΩ	2.2MEG
2	12BA6	2.2MEG.	0Ω	23Ω	34Ω	40KΩ	40KΩ	100Ω
3	12AT6	2 MEG.	0Ω	13Ω	0Ω	460KΩ	460KΩ	550KΩ
4	50B5	460KΩ	140Ω	34Ω	78Ω	40KΩ	40KΩ	460KΩ
5	35W4	INF.	INF.	78Ω	102Ω	130Ω	99Ω	40KΩ

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

471-27

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TRAV-LER MODEL 5020

TRADE NAME	Trav-ler, Model 5020 (Ch. 800)
MANUFACTURER	Trav-ler Karenola Radio & Tel. Corp., 571 W. Jackson Blvd., Chicago, Ill.
TYPE SET	3 Power Portable AC-DC-Battery Superheterodyne - Self Contained Loop Antenna
TUBES (FOUR)	Types, 1LC6 Converter, 1LN5 IF Amp., 1LH4 Det.-AVC-AF, 3Q5GT Power Output
POWER SUPPLY	110-125 Volts AC-DC or 2 - 4½ V "A" Batteries & 2 - 45 V "B" Batteries (See Schematic for replacement battery chart)
RATING	.170 Amps. @ 117V AC or 14MA @ 9V DC and 51 MA @ 94V DC
TUNING RANGE—BROADCAST	540-1720KC

ALIGNMENT INSTRUCTIONS

To set pointer, turn variable fully closed and set pointer at the last reference mark at the low frequency end of the dial. Use battery power for alignment if available. If a-c power is used, use isolation transformer if available. If not, connect capacitor in series with the low side of the signal generator and chassis. Set volume control at maximum volume and keep input from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator of rear section of variable. Low side to chassis.	455KC	High freq. end.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If ac power is used without an isolation transformer, reduce dummy ant. to 200 MMF. to reduce hum modulation.
.1 MFD.	"	1720KC	"	"	A5	"
200 MMF	High side to ext. ant. lead. Low side to ext. gnd. lead.	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: TRAV-LER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1LC6	1LC6	7AK	
2	IF Amp.	1LN5	1LN5	7AO	
3	Det.-AVC-AF	1LH4	1LH4	5AG	
4	Power Output	3Q5GT	3Q5GT	7AP	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRAV-LER PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	40	150	EC-10	DSB-2x40-150	TA-440	PRSA150-40-40	BRD4415	2N511	Filter - Red
B	40	150							" - Red
6	20	80		M-20-150	UT-201	PRS150-20	BR2015	TC45	Filter
7	70	10	EC-6		UHC-112	PRS25-100	BRH121		Filament Bypass
8	.05	400	PC-5	S-4-05	TC-15	484-05	DT4S5	TP426	Rect. Bypass
9	.05	400	PC-5	S-4-05	TC-15	484-05	DT4S5	TP426	Audio Plate Decoup.
10	.006	600		S-6-006	TC-26	684-006	DT6D6	TP409	Audio Coupling
11	.1	400	PC-8	S-4-1	TC-1	484-.1	DT4P1	TP428	IF Fil. Bypass
12	.05	400	PC-5	S-4-05	TC-15	484-05	DT4S5	TP426	AVC Filter
13	.01	400	PC-7	S-4-01	TC-11	484-01	DT4S1	TP421	Osc. Anode Bypass
14	.05	400	PC-5	S-4-05	TC-15	484-05	DT4S5	TP426	Conv. Screen Bypass
15	5000	300	PC-6	MW.5-25	1FM-25	1467-005	1D5D5	MC465	Output Plate Bypass
16	5000	300	PC-6	MW.5-25	1FM-25	1467-005	1D5D5	MC465	Audio Coupling
17	100	500	MC-2	M0.5-31	1FM-31	1468-0001	5W5T1	MC235	Audio Plate Bypass
18	100	500	MC-2	M0.5-31	1FM-31	1468-0001	5W5T1	MC235	IF Bypass Diode
19	100	500	MC-2	M0.5-31	1FM-31	1468-0001	5W5T1	MC235	Osc. Grid Capacitor

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
20A	1 Meg.	1		MR53	D13-137	M-63-Z	Volume Control - See Note 1
B	Shaft			Not Req.	A	Not Req.	Attach to 20A per instructions
20A	500KΩ	1		MR48	D13-133	M-60-Z	Volume Control - See Note 2
B	Shaft			Not Req.	A	Not Req.	Attach to 20A per instructions

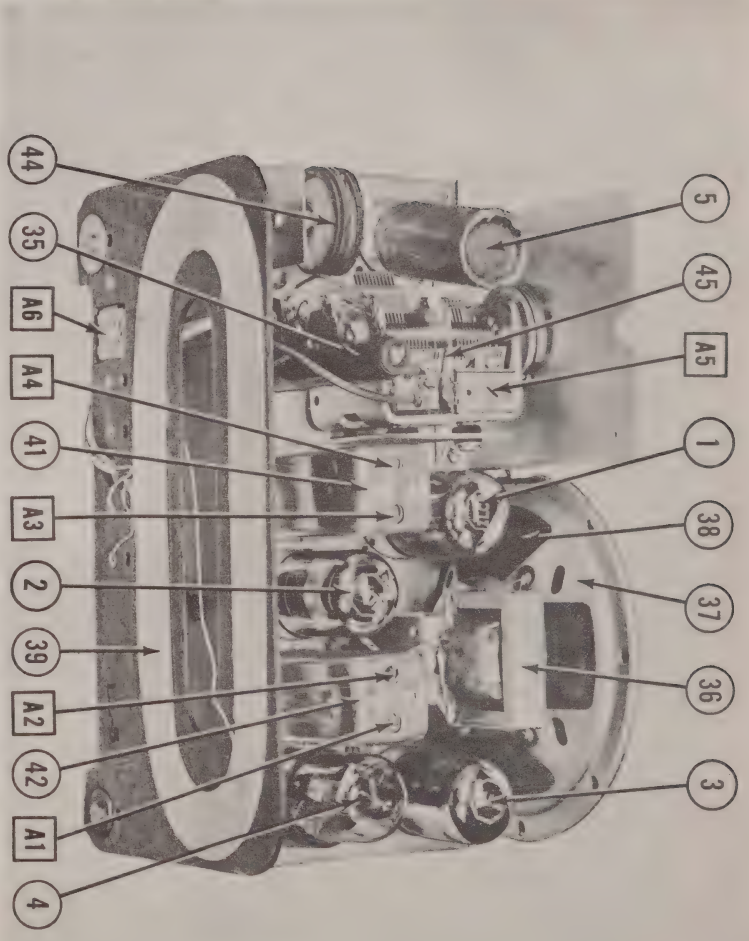
Note 1 - Used in later production.
Note 2 - Used in early production.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	IRC PART No.	IDENTIFICATION CODES
21	220KΩ	½	1R-20	BTS-220K	Red-Red-Yl. Oscillator Grid
22	22KΩ	½	1R-9	BTS-22K	Red-Red-Or. Oscillator Screen Dropping
23	22KΩ	½	1R-9	BTS-22K	Red-Red-Or. Oscillator Screen Decoupling
24	3.9 Meg.	½	1R-23	BTS-3.9 Meg.	Or.-White-Grn. AVC Network
25	82KΩ	½	1R-31	BTS-82K	Gray-Red-Or. Diode RF Filter
26	10 Meg.	½	1R-3	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
27	1 Meg.	½	1R-12	BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Plate Load
28	470KΩ	½	1R-11	BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Decoupling
29	2.2 Meg.	½	1R-13	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
30	680Ω	½	1R-32	BTS-680	Blue-Gray-Br. Filament String
31	270Ω	½	1R-33	BW-½-270	Red-Vi.-Br. Filament String- See Note 3
32	330Ω	½	1R-21	BW-½-330	Or.-Or.-Br. Filament String
33	1200Ω	½	1R-34	BTS-1200	Br.-Red-Red Filter
34	75Ω	2	1R-35	BW-2-68	Vi.-Grn.-Blk. Surge Limiter-See Note 4
35A	1050Ω	10	WR-3		Filament String
35B	1050Ω	10			" "
35C	40Ω	10			" " -See Note 5

Note 3 - Some models use two 500Ω resistors in parallel.
Note 4 - Some models use two 150Ω 1 Watt resistors in parallel.
Note 5 - Some models use a 60Ω section of Item 35 paralleled by a 150Ω 1 Watt resistor.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRAV-LER PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
36	6400Ω	3.1Ω	250Ω	.4Ω	Part of SPK-5	A-3878*	T22S46		*Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

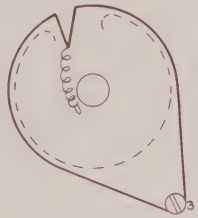
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TRAV-LER PART No.	JENSEN PART No.		
37	FIELD	VC IMP.	SPK-5	ST-10S1 Mod. P5-W	†Cut off flange to clear dial.	
	PM	3.1Ω				
38	CONE DIA.	VC DIA.	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			
	4-3/4"	1/2"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	TRAV-LER PART No.	MEISSNER PART No.	
39	Loop Ant.	.1Ω	1.5Ω	LI-5		
40	Osc. Coil	.3Ω	1Ω	LO-8	14-1040	
41	Input IF	19Ω	20Ω	LI-3	16-6666	
42	Output IF	19.5Ω	19Ω	LI-4	16-6667	

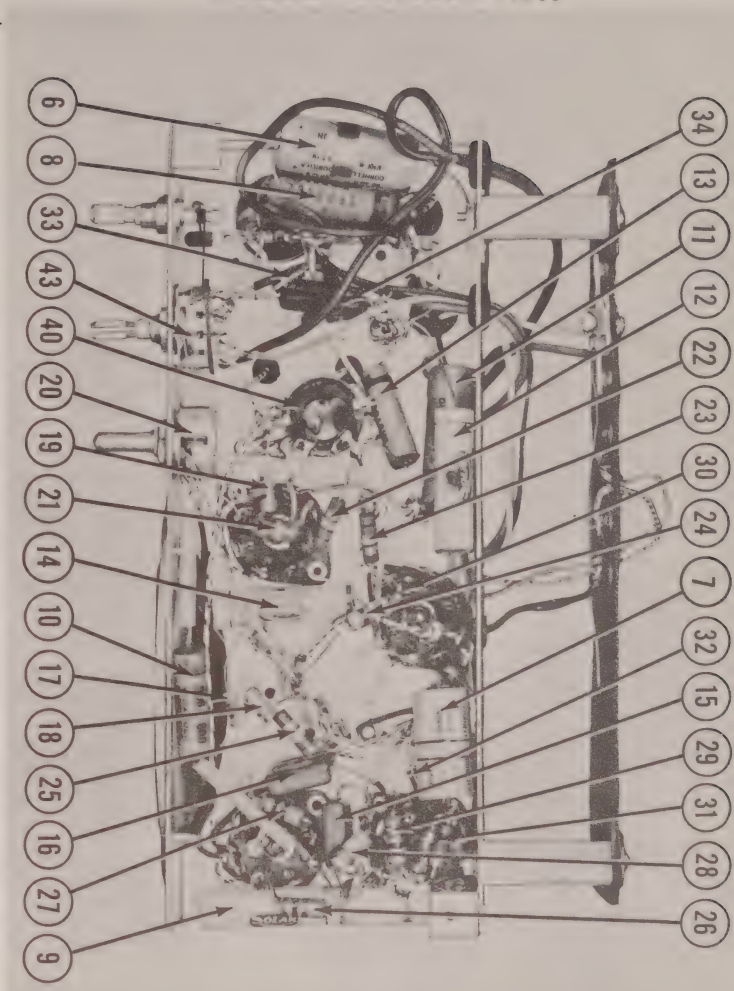
MISCELLANEOUS

ITEM No.	PART NAME	TRAV-LER PART No.	NOTES
43	Power Switch	SW-3	4 Pole 3 Position
44	Rectifier	SR-1	Selenium
45	Tuning Cap.	GC-2	2 Gang Var. Cap.
A5	Trimmer Cap.	TC-6	Osc. Adj.
A6	" "	TC-7	Ant. Adj.

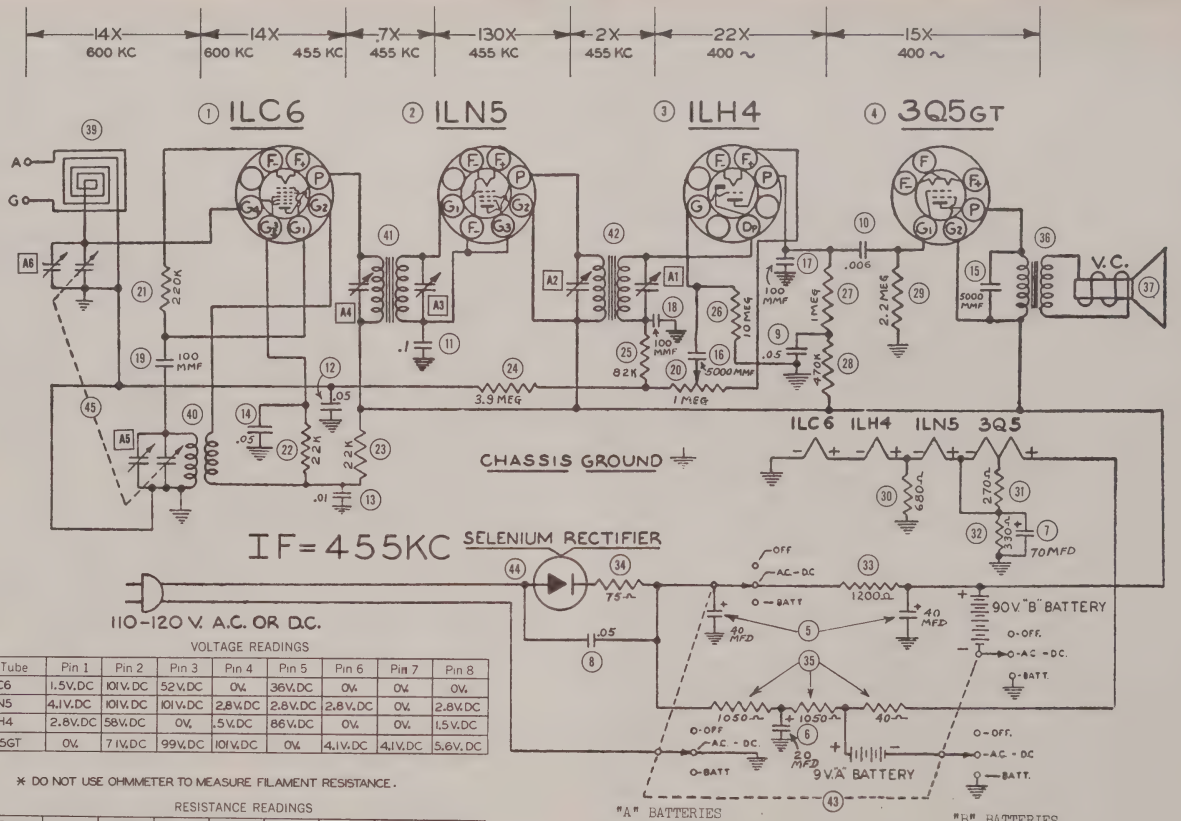


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



TRAV-LER MODEL 5020



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	ILC6	1.5V.DC	101V.DC	52V.DC	0V.	36V.DC	0V.	0V.	0V.
2	ILN5	4.1V.DC	101V.DC	101V.DC	2.8V.DC	2.8V.DC	2.8V.DC	0V.	2.8V.DC
3	ILH4	2.8V.DC	58V.DC	0V.	.5V.DC	86V.DC	0V.	0V.	1.5V.DC
4	3Q5GT	0V.	71V.DC	99V.DC	101V.DC	0V.	4.1V.DC	4.1V.DC	5.6V.DC

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	ILC6	*	3 KΩ	23 KΩ	220 KΩ	4.5 MEG	41 KΩ	INF.	*
2	ILN5	*	3 KΩ	3 KΩ	*	*	*	4.5 MEG.	*
3	ILH4	*	1.4 MEG.	INF.	930 KΩ	380 KΩ	10 MEG.	INF.	*
4	3Q5GT	0Ω	*	3 KΩ	3 KΩ	2.2 MEG.	*	*	*

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

Mfgr.	Volts	Type No.
Burgess	4½ "A"	G3
General	4½ "A"	3H3
Bright Star	4½ "A"	361
Usalite	4½ "A"	683
Rayovac	4½ "A"	P83A
Eveready	4½ "A"	746

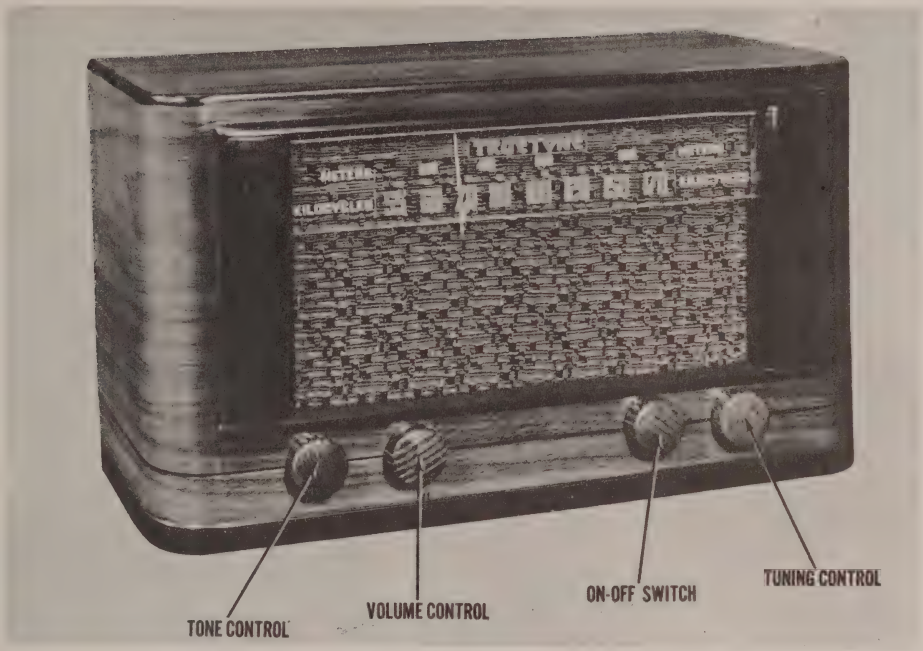
Mfgr.	Volts	Type No.
Burgess	45 "B"	M30
General	45 "B"	W30B
Bright Star	45 "B"	3033
Usalite	45 "B"	640
Rayovac	45 "B"	P7830
Eveready	45 "B"	482

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

471-28

The stage gain measured values listed above are approximate values for an average stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting to low side of volume control.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.



TRUETONE
MODEL D2623

TRUETONE
MODEL D2623

TRUETONE MODEL D2623

TRADE NAME	Truetone Model D2623
MANUFACTURER	Western Auto. Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	AC Operated Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types, 6SK7GT RF Amp., 6SA7GT Converter, 6SK7GT IF Amp., 6SQ7GT Det.-AVC-AF, 6K6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	117 Volt AC
TUNING RANGE—BROADCAST	535-1725KC RATING .47 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

To set pointer, turn variable fully closed and set pointer at the first mark from left end of dial plate. Place coupling link on loop in correct position for external antenna operation while aligning receiver. Volume control in maximum volume position and output from signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin 8 of 6SA7. Low side to chassis.	455KC	High freq.end of dial.(Variable fully open).	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
250 MMF.	High side to ant. terminal on loop. Low side to grnd. terminal.	1725KC	"	"	A5	" " " "
"	"	1500KC	Tune for maximum output.	"	A6,A7.	Adjust for maximum output in order given.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7GT	6SK7GT	8N	
2	Converter	6SA7GT	6SA7GT	8AD	
3	IF Amp.	6SK7GT	6SK7GT	8N	
4	Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
5	Power Output	6K6GT	6K6GT	7S	
6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7	16	450	A16-274	ST597	DH-16-450	UT-16	PRS450-16	BR1645	Filter
8	16	450	A18-279	ST597	DH-13-450	UT-16	PRS450-16	BR1645	"
9	.005	600	A16-153	TP408	S-6-005	TC-25	684-005	DT6D5	6K6 Plate Bypass
10	.01	400	A16-156	TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
11	.01	400	A16-156	TP421	S-4-01	TC-11	484-01	DT4S1	Tone Compensation
12	.05	400	A16-158	TP426	S-4-05	TC-15	484-05	DT4S5	Audio Plate Decoup.
13	.01	400	A16-156	TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
14	.05	200	A16-152	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
15	.05	400	A16-158	TP426	S-4-05	TC-15	484-05	DT4S5	IF Screen Bypass
16	.05	200	A16-152	TP426	S-4-05	TC-15	484-05	DT4S5	IF Cath. Bypass
17	.05	400	A16-158	TP426	S-4-05	TC-15	484-05	DT4S5	RF Screen Bypass
18	.05	200	A16-152	TP426	S-4-05	TC-15	484-05	DT4S5	RF Cath. Bypass
19	.05	400	A16-158	TP426	S-4-05	TC-15	484-05	DT4S5	Conv. Screen Bypass
20	.05	200	A16-152	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
21	250	500	A15-176	MC240	M0.5-325	1FM-325	1468-00025	5W5T25	Audio Plate Bypass
22	50	500	A15-175	MC225	M0.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Capacitor
23	50	500	A15-175	MC225	M0.5-45	1FM-45	1468-00005	5W5Q5	RF Trans. Fixed Tuned
24	200	500		MC237	M0.5-32	1FM-32	1468-0002	5W5T2	Ant. Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
25A	500KΩ	1	A24-169	MK401	D13-133	AM-30-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 25A per instructions
26A	3 Meg.	1	A26-123	UM165	D13-140	AM-37-Z	Tone Control
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 26A per instructions

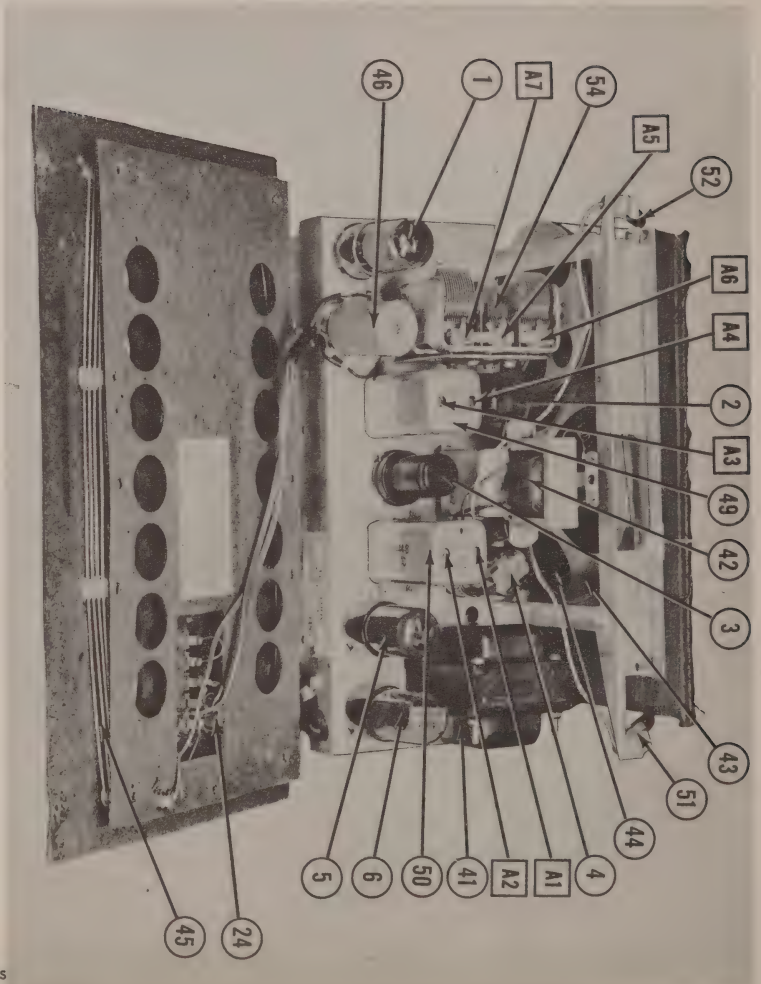
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	IDENTIFICATION CODES
27	220KΩ	1/3	A60-667	BTS-220K	Red-Red-Yl. AVC Network
28	100KΩ	1/2	A60-671	BTS-100K	Br.-Blk.-Yl. RF Screen Dropping
29	27KΩ	1	A60-692	BTA-27K	Red-Vi.-Or. Mixer Screen Dropping
30	150Ω	1/3	A60-686	BW-½-150	Br.-Grn.-Br. RF Cathode
31	22KΩ	1/3	A60-659	BTS-22K	Red-Red-Or. Osc. Grid
32	150Ω	1/3	A60-686	BW-½-150	Br.-Grn.-Br. IF Cathode
33	100KΩ	1/2	A60-671	BTS-100K	Br.-Blk.-Yl. IF Screen Dropping
34	10 Meg.	1/3	A60-663	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
35	220KΩ	1/3	A60-667	BTS-220K	Red-Red-Yl. 1st AF Plate Load
36	200KΩ	1/3	A60-667	BTS-220K	Red-Blk.-Yl. 1st AF Plate Filter
37	500KΩ	1/2	A60-662	BTS-470K	Grn.-Blk.-Yl. Output Grid
38	500Ω	1	A60-701	BTA-470	Grn.-Blk.-Br. Output Cathode
39	82KΩ	1	A60-700	BTA-82K	Gray-Red-Or. Bleeder
40	1000Ω	2	A60-669	BT-2-1000	Br.-Blk.-Red Filter

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: TRUETONE PART No.	STANCOR PART No.	THORDARSON PART No.	INSTALLATION NOTES
41	117V AC	590V CT @ .059A	4.9V AC @ 1.8A	6.2V AC @ 1.88A	C80-223	P-6119	T-13R20	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
42	6200Ω	3.5Ω	480Ω	.64Ω	Part of B79-342	A-3878†	T22847†		†Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TRUETONE PART No.	JENSEN PART No.		
	FIELD	VC IMP.	B79-341	ST-112		
43	PM	3.5Ω	B79-342*	Mod. P6-T		*Alternate speaker assembly.
	CONE DIA.	VC DIA.				
44	6-1/16"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	
45A	Loop Ant.	0Ω	0Ω	S84-50		For Mahogany Cabinet
B	" "	0Ω	0Ω	S84-52		" Ivory "
46	Ant. Coil	37Ω	4Ω	S13-451		
47	RF "	68Ω	2.5Ω	B10-452	14-1027	
48	Osc. "		5Ω	A10-446	14-1040	
49	Input IF	17.5Ω	26Ω	B10-412	16-6658	
50	Output IF	18Ω		B10-444	16-6660‡	

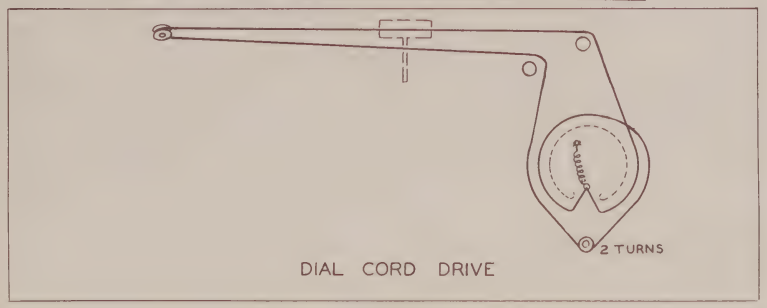
‡From low end of secondary winding, add 250 MMFD cap. to ground, 1 Meg. resistor to second diode, 50KΩ resistor to high side volume control.

DIAL LIGHT

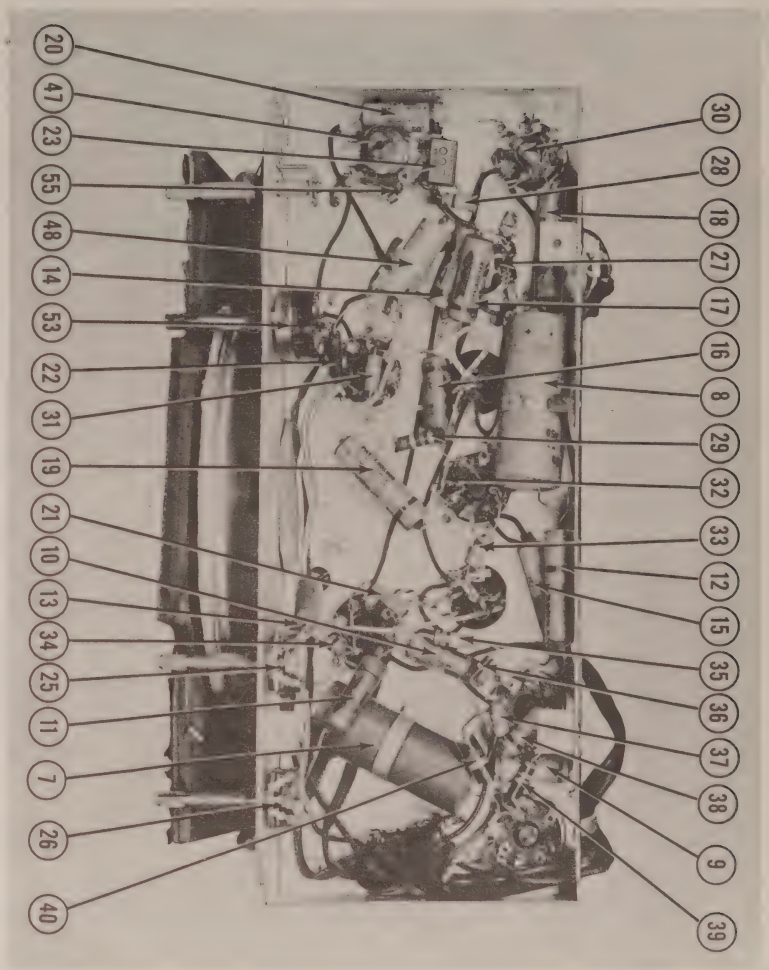
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					TRUETONE PART No.		
51	Bayonet	6-8	0.25	Blue			Type 44
52	"	6-8	0.25	"			" "

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
53	Switch	A69-169	On-Off
54	Tuning Cap.	D19-186	3 Gang Variable Cap.
55A	Capacitor		2 MMF - Not used in all models.
B	"		" " " " " "

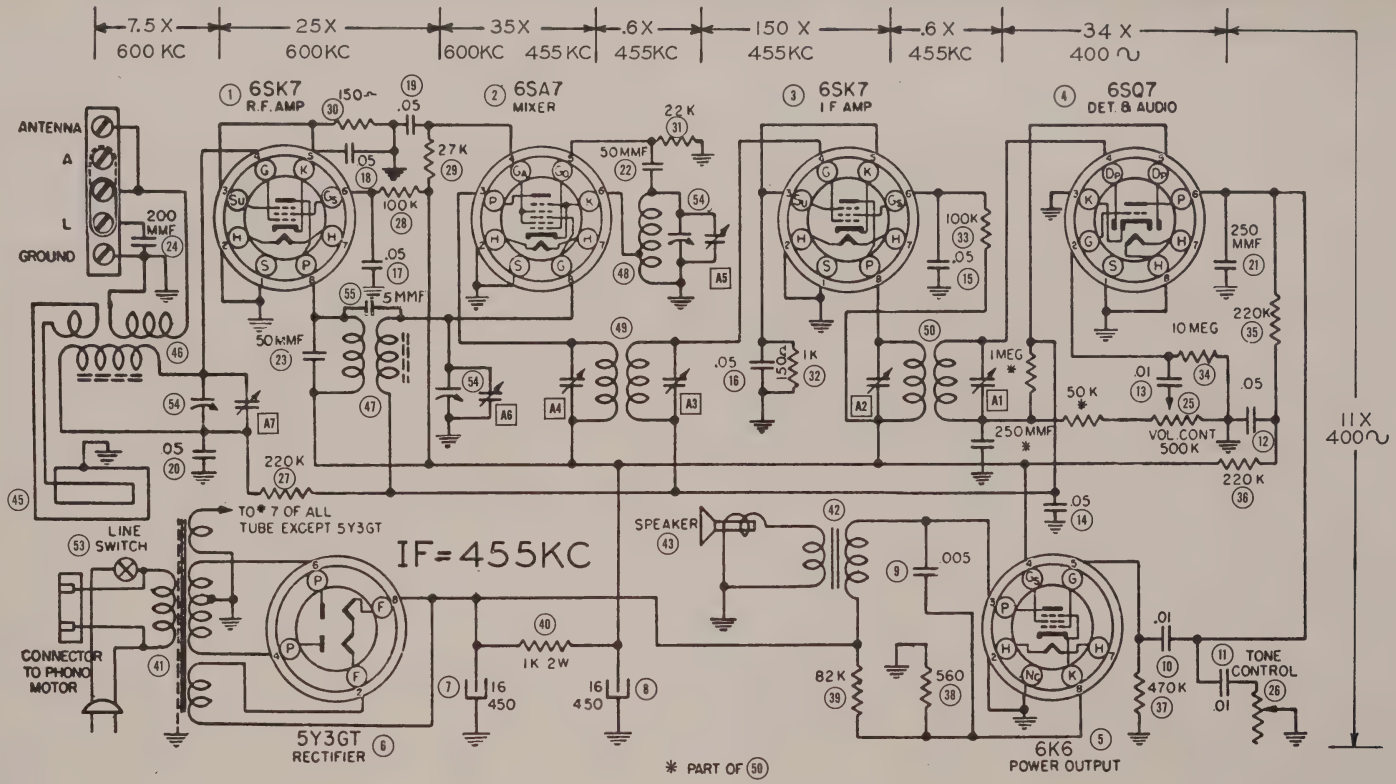


CHASSIS—BOTTOM VIEW



TRUETONE MODEL D2623

TRUETONE MODEL D2623



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0V.	0V.	1.4V.DC	-.07V.DC	1.4V.DC	70V.DC	6.2V.AC	260V.DC
2	6SA7GT	0V.	0V.	260V.DC	85V.DC	- 4.1V.DC	0V.	6.2V.AC	-.35V.DC
3	6SK7GT	0V.	0V.	6.6V.DC	-.35V.DC	6.6V.DC	112V.DC	6.2V.AC	260V.DC
4	6SQ7GT	0V.	-.8V.DC	0V.	-.35V.DC	-.15V.DC	85V.DC	6.2V.AC	0V.
5	6K6GT	0V.	0V.	275V.DC	260V.DC	0V.	172V.DC	6.2V.AC	19V.DC
6	5Y3GT	288V.DC	288V.DC	0V.	285V.AC	0V.	285V.AC	0V.	288V.DC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0 Ω	0 Ω	150 Ω	1.6MEG	150 Ω	160KΩ	.1 Ω	56KΩ
2	6SA7GT	0 Ω	0 Ω	56KΩ	80KΩ	21.5KΩ	.5Ω	.1 Ω	1.4 MEG
3	6SK7GT	0 Ω	0 Ω	150Ω	1.4 MEG	150Ω	160KΩ	.1 Ω	56 KΩ
4	6SQ7GT	0 Ω	1MEG	0 Ω	1.4MEG	520KΩ	500KΩ	.1 Ω	0 Ω
5	6K6GT	0 Ω	0 Ω	56KΩ	56KΩ	500KΩ	250KΩ	.1 Ω	490Ω
6	5Y3GT	56KΩ	56KΩ	INF	210 Ω	INF	220 Ω	INF	56KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

471-29

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TRUETONE
MODEL D2644

TRUETONE
MODEL D2644

TRUETONE MODEL D2644

TRADE NAME	Truetone, Model D2644
MANUFACTURER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Battery Operated Superheterodyne Receiver
TUBES (FOUR)	Types, 1A7GT Converter, 1N5GT IF Amp., 1H5GT Det.-AVC-AF; 3Q5GT Power Output.
POWER SUPPLY	90 Volt "B" Battery & 1½ Volt "A" Battery-Burgess Type 17G-D60 or equiv.)
TUNING RANGE—BROADCAST	535-1725KC RATING 14MA @ 90V DC & 245MA @ 1.5V DC

Volume control at maximum volume position and output from signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1MFD.	High side to grid cap of 1A7. Low side to chassis.	455KC	High freq.end of dial.(Variable fully open).	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
250 MMF	High side to ant. lead. Low side to chassis.	1725KC	"	"	A5	" " " "
"	"	1500KC	Tune for maximum output.	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1A7GT	1A7GT	7Z	
2	IF Amp.	1N5GT	1N5GT	5Y	
3	Det.-AVC-AF	1H5GT	1H5GT	5Z	
4	Power Output	3Q5GT	3Q5GT	7AP	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5	4	150	A1a-273	TC40	M-4-150	UT-41	PRS150-4	BR415	Pwr. Supp. Bypass
6	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	3Q5 Plate Bypass
7	.01	400		TP426	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
8	.01	400		TP426	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
9	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	IF Grid Capacitor
10	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	Conv. Screen Bypass
11	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Pwr. Supp.
12	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
13	250	500		MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Audio Plate Bypass
14	50	500		MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Capacitor
15	50	500		MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Pri. Ant. Shunt

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
16A	1 Meg.	1	A24-165	MK402	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 16A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "

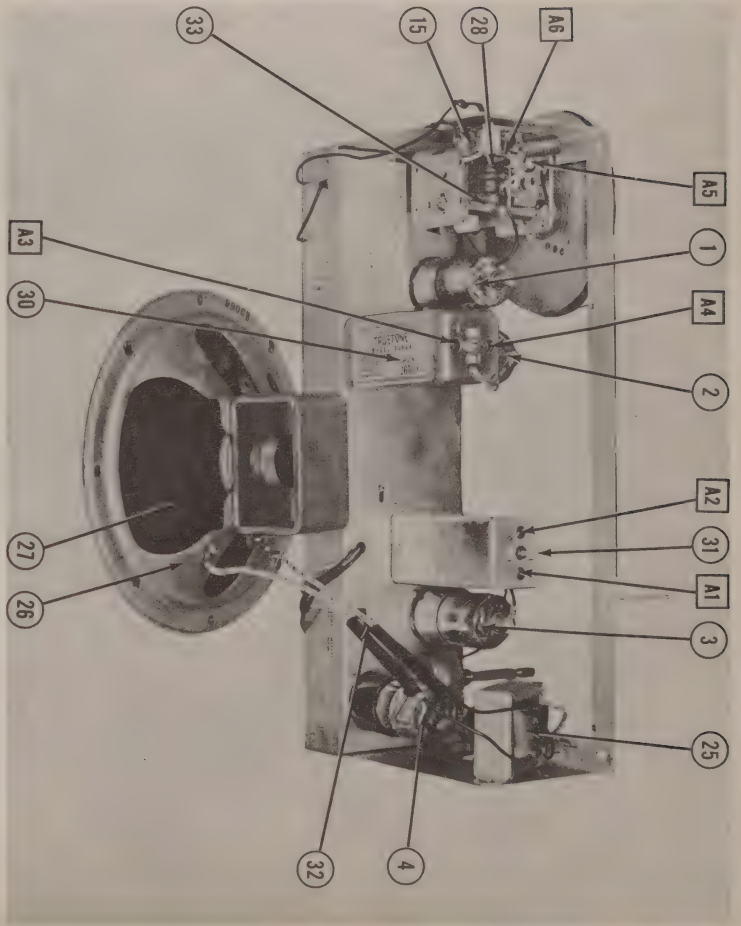
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
17	220KΩ	½		BTS-220K	Red-Red-Yl. Osc. Grid
18	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Screen Dropping
19	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. IF Grid
20	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
21	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
22	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
23	390Ω	½		BW-½-390	Or.-White-Br. Bias
24	.75Ω	1		BW-1-.68	Series Filament

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.		INSTALLATION NOTES
25A	10000Ω	3.2Ω	325Ω	.7Ω	A80-226	A-3831	T14S85		
B					A80-218*				*Output Transformer for alternate speaker.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA TRUETONE PART No.	JENSEN PART No.		INSTALLATION NOTES
26A	FIELD	VC IMP.		ST-111		
	P1	3.2Ω	B79-745	Mod. P6-U		
B			B79-335			Alternate speaker.
	CONE DIA.	VC DIA.				
27	6"	1/2"	NOT READILY	REPLACEABLE-USE COMPLETE SPEAKER UNIT.		

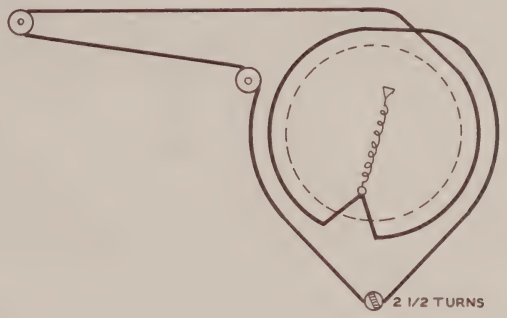
R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA TRUETONE PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
28	Ant. Coil	58Ω	3Ω	A10-414	14-1026	
29	Osc. Coil	2Ω	6Ω	A10-415	14-1040	
30	Input IF	4.5Ω	4.3Ω	B10-418	16-5740	
31	Output IF	6.5Ω		B10-417	16-5742*	

*Add from low end secondary, 250 MMFD cap. to ground, 47KΩ resistor to high end vol. control, 1 Meg. resistor to low end ant. coil secondary.

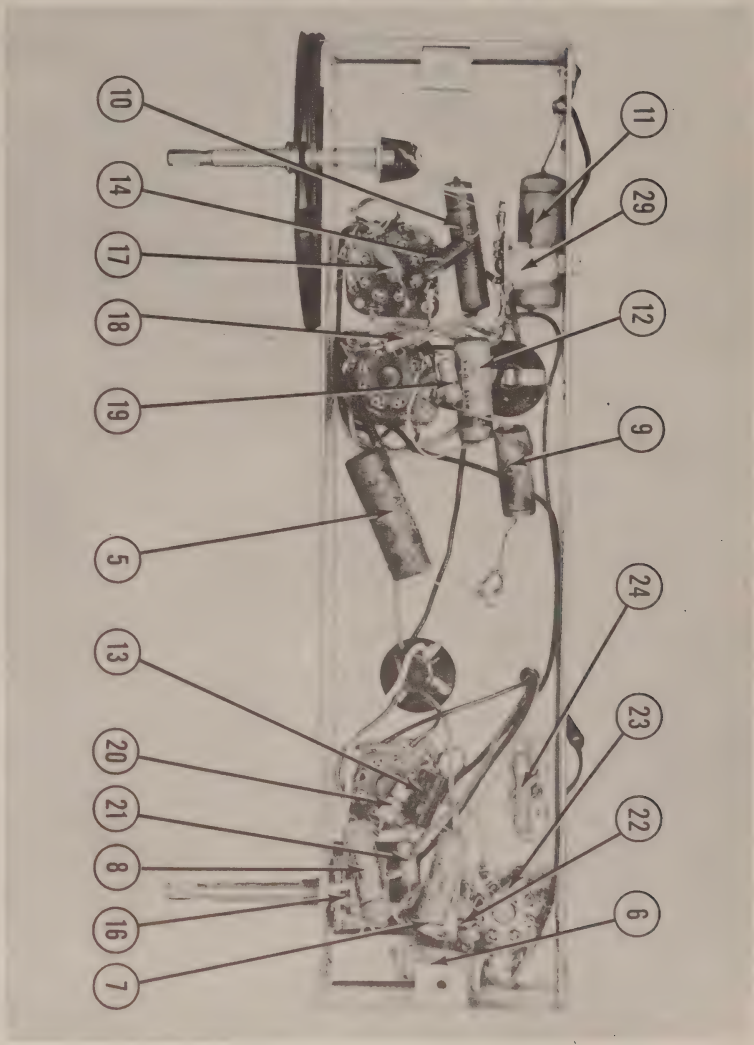
MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
32	Switch	A69-164	Battery Thriftmaster
33	Tuning Cap.	B19-185	2 Gang Variable Cap.
	Dial Scale	B67-484	
	Dial Pointer	A58-42	
	Knob	A52-182	
	Cabinet	D42-377	Wood

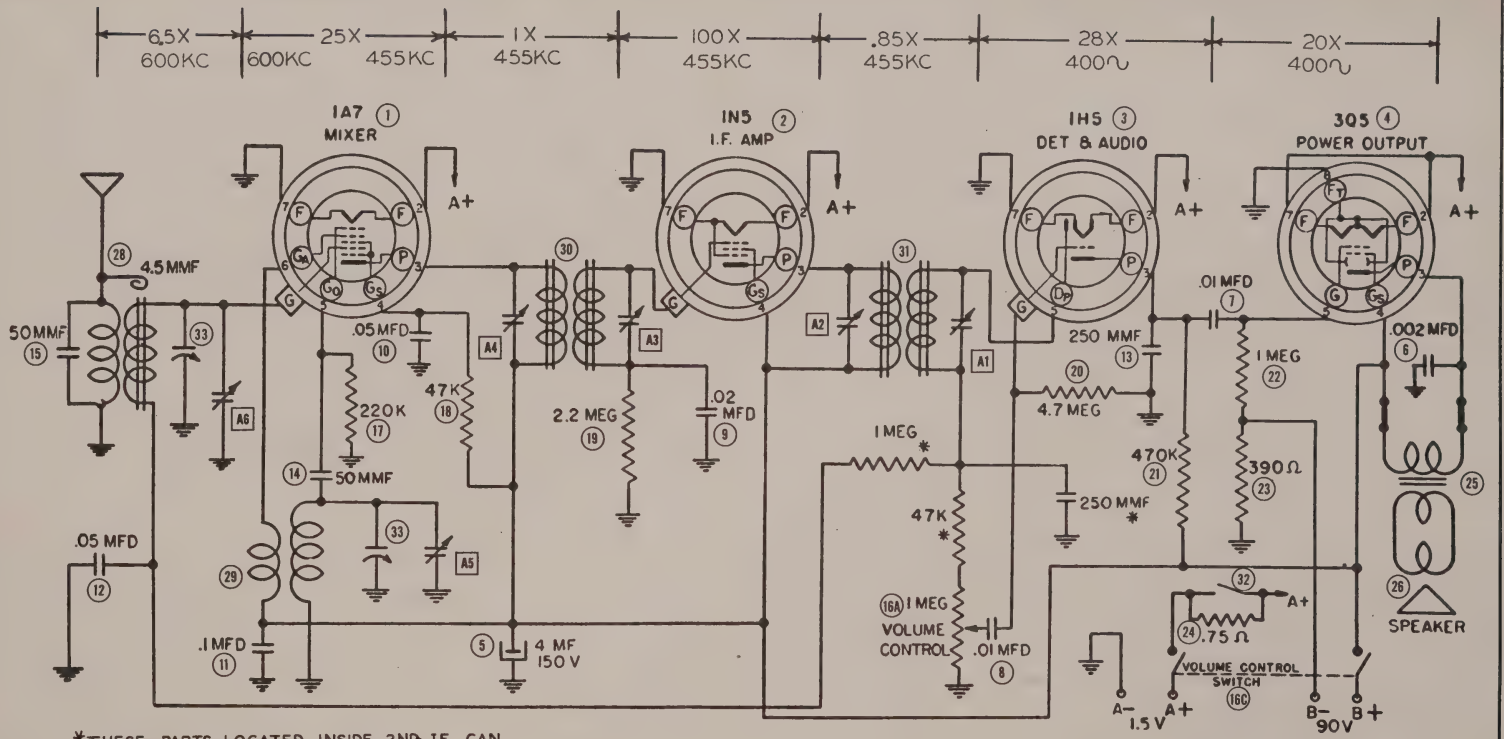


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



TRUETONE MODEL D2644



*THESE PARTS LOCATED INSIDE 2ND IF CAN.

IF=455KC

NOTE: VOLT. & RES. READING TAKEN WITH BATTERY SWITCH IN "NEW" POSITION.

471-30

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0V.	1.4V.DC	89V.DC	40V.DC	0V.	89V.DC	0V.	0V.	0V.
2	1N5GT	0V.	1.4V.DC	89V.DC	89V.DC	0V.	0V.	0V.	0V.	0V.
3	1H5GT	0V.	1.4V.DC	69V.DC	0V.	0V.	0V.	0V.	0V.	0V.
4	3Q5GT	0V.	1.4V.DC	87V.DC	89V.DC	-.45VDC	-5.4V.DC	1.4V.DC	0V.	

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0Ω	2Ω	62KΩ	109KΩ	185KΩ	62KΩ	0Ω	1 NF	1.9MEG
2	1N5GT	0Ω	2Ω	62KΩ	62KΩ	1 NF	2 MEG	0Ω	2.8MEG	2.5MEG
3	1H5GT	0Ω	2Ω	530KΩ	4.5MEG	1MEG	1 NF	0Ω	0Ω	4.5MEG
4	3Q5GT	0Ω	2Ω	62KΩ	62KΩ	1MEG	360Ω	2Ω	0Ω	

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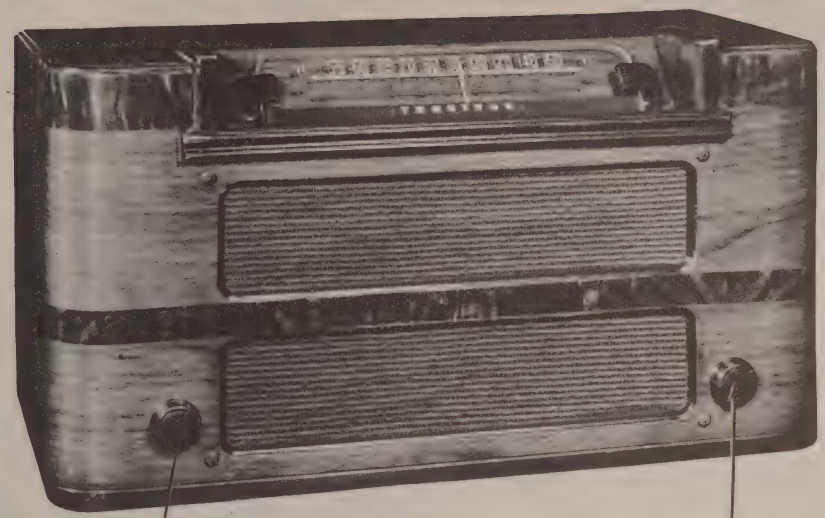
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to ground.

1 - DC Voltage measurements are at 20,000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.

TRUETONE
MODEL D2663



TRUETONE
MODEL D2663

TRUETONE MODEL D2663

TRADE NAME	Truetone, Model D-2663 (Chassis 4C1)
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Battery Operated Superheterodyne Receiver
TUBES (FOUR)	Types 1A7GT 1st Det.-Osc, 1N5GT IF Amp, 1H5GT Det.-AVC-AF, 3Q5GT Power Output
POWER SUPPLY	1½ Volt "A" Battery & 90 Volt "B" Battery in Pack Form (Ray-O-Vac #AB-82 or Equiv.)
TUNING RANGE—BROADCAST	535-1630KC

ALIGNMENT INSTRUCTIONS

Before starting alignment check to see that dial pointer reaches each end of dial when tuning control is turned from one end to the other. Before adjusting A5, A6 make sure that each iron core is 1 3/8" or more outside of it's coil form. If necessary turn A7, A8, to make them so. Volume control should be at maximum and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to grid cap. of 1A7 tube #1. Low side to chassis.	455KC	High End	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
200 MFD.	High side to ant. lead and low side to chassis.	1630KC	High End	"	A5,A6	"
200 MFD.	"	1300KC	1300KC	"	A7,A8	"

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	1st Det.-Osc.	1A7GT	1A7GT	7Z	
2	IF Amp.	1N5GT	1N5GT	5Y	
3	Det.-AVC-AF	1H5GT	1H5GT	5Z	
4	Power Output	3Q5GT	3Q5GT	7AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5	4	150	67A4-2	M-4-150	UT-41	PRS150-4	BR415	TC40	Pwr. Supp. Bypass
6	.005	600	64B1-12	S-6-005	TC-25	684-005	DT6D5	TP408	Output Plate Bypass
7	.01	400	64B1-25	S-4-01	TC-11	484-01	DT4S1	TP421	Audio Coupling
8	.01	400	64B1-25	S-4-01	TC-11	484-01	DT4S1	TP421	" "
9	.05	200	64B1-32	S-4-05	TC-15	484-05	DT4S5	TP426	AVC Filter
10	.01	400	64B1-25	S-4-01	TC-11	484-01	DT4S1	TP421	IF Plate Decoup.filter
11	.002	600	64B1-14	S-6-002	TC-22	684-002	DT6D2	TP405	IF Grid Bypass
12	.01	400	64B1-25	S-4-01	TC-11	484-01	DT4S1	TP421	Screen Bypass
13	.01	400	64B1-25	S-4-01	TC-11	484-01	DT4S1	TP421	Osc. Anode Coupling
14	.01	400	64B1-25	S-4-01	TC-11	484-01	DT4S1	TP421	Ant. Coupling
15	250	500	65B7-22	M0.5-325	1FM-325	1468-00025	5W5T25	MC240	Audio Plate Bypass
16	250	500	65B7-22	M0.5-325	1FM-325	1468-00025	5W5T25	MC240	IF Bypass Diode
17	100	500	65B7-17	M0.5-31	1FM-31	1468-0001	5W5T1	MC235	Osc. Grid Capacitor
18	800	500	65B5-31	M0.3-38	MS-38	1479-0008	1W5T8	MC251	Fixed Padder
19	800	500	65B5-31	M0.3-38	MS-38	1479-0008	1W5T8	MC251	Fixed Padder
20	200	500		M0.5-32	1FM-32	1468-0002	5W5T2	MC237	Fixed Trimmer *
21	20	500		M0.5-425	MS-42	1468-000025	5W5Q2	MC220	" " *
22	120	500		M0.5-31	1FM-31	1468-0001	5W5T1	MC235	" " *
23	20	500		M0.5-425	MS-42	1468-000025	5W5Q2	MC220	" " *

*Not used in all models.

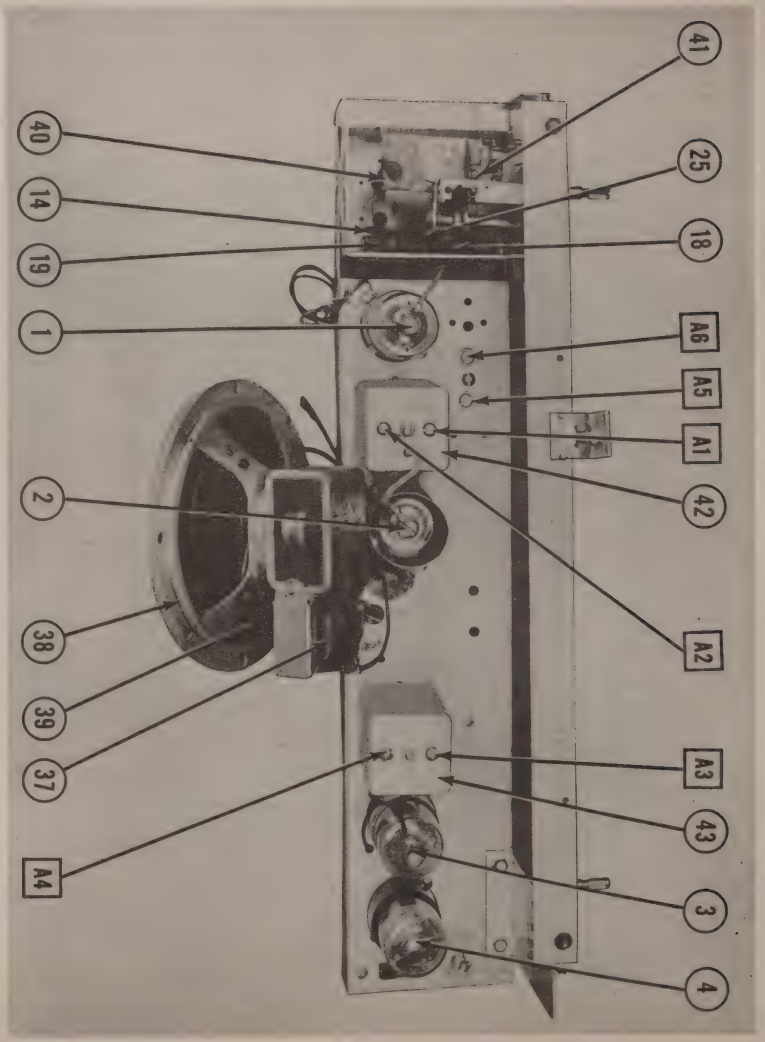
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
24A	1 Meg.	1	75B1-1	MK402	D13-137	AM-63-Z	Volume Control.
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 24A per instructions.
C	Switch		" "	M27	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	IDENTIFICATION CODES
25	15KΩ	½	60B8-153	BTS-15K	Br.-Grn.-Or. Antenna Loading
26	470KΩ	½	60B2-474	BTS-470K	Yl.-Vi.-Yl. AVC Network
27	220KΩ	½	60B8-224	BTS-220K	Red-Red-Yl. Oscillator Grid
28	33KΩ	½	60B8-333	BTS-33K	Or.-Or.-Or. Converter Screen Dropping
29	4.7 Meg.	½	60B2-475	BTS-4.7 Meg.	Yl.-Vi.-Grn. IF Grid
30	2200Ω	½	60B2-222	BTS-2200	Red-Red-Red " Plate Decoupling
31	2.2 Meg.	½	60B2-225	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
32	4.7 Meg.	½	60B2-475	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
33	1 Meg.	½	60B2-105	BTS-1 Meg.	Br.-Blk.-Grn. " " Plate Load
34	1 Meg.	½	60B2-105	BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
35	390Ω	½	60B2-391	BW-½-390	Or.-White-Br. Bias
36	.75	½	61A2-1	BW-½-.75	Vi.-Grn.-Silver Battery Saver

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
37A	7200Ω	3.7Ω	330Ω	.6Ω	Part of 78B15.	A-3878 †	T22886†		† Bend mounting tabs down, file out slots and mount on original bracket.
37B					Part of 78B10				Alternate Transformer.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TRUETONE PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-107		
38A	PM	3.7Ω	78B15	Mod. P5-V		
B			78B10			Alternate Speaker
	CONE DIA.	VC DIA.				
39	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

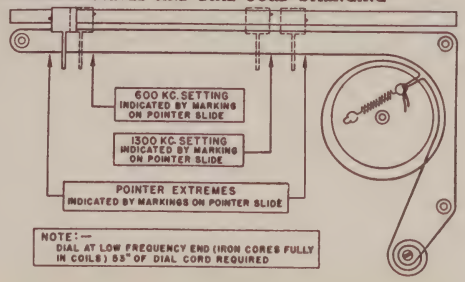
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	
40	Ant. Coil		3.5Ω	AC-105-1		
41	Osc. Coil		8Ω	Ab-104-4		
42	Input IF	14.5Ω	18Ω	72b5	16-6658	
43	Output IF	16.5Ω	13.5Ω	72b6	16-6660	
44	RF Choke	16Ω		Ab103-1		

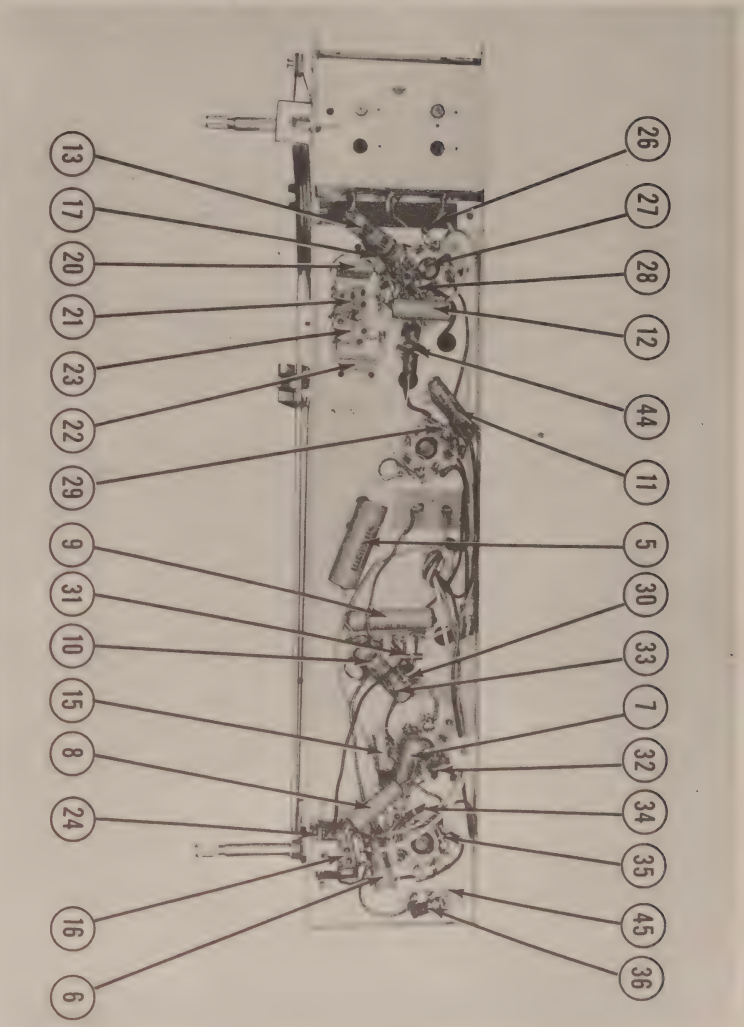
MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
45	Economizer SW	77A1-6	SPST
A5 A6	Trimmer Cap.	66A9-1	Osc. & Ant. Adj. (Dual Unit)
	Knob	3A10-2	
	Pointer	25A10-1	
	Dial Scale	21b14-1	

POINTER SETTINGS AND DIAL CORD STRINGING

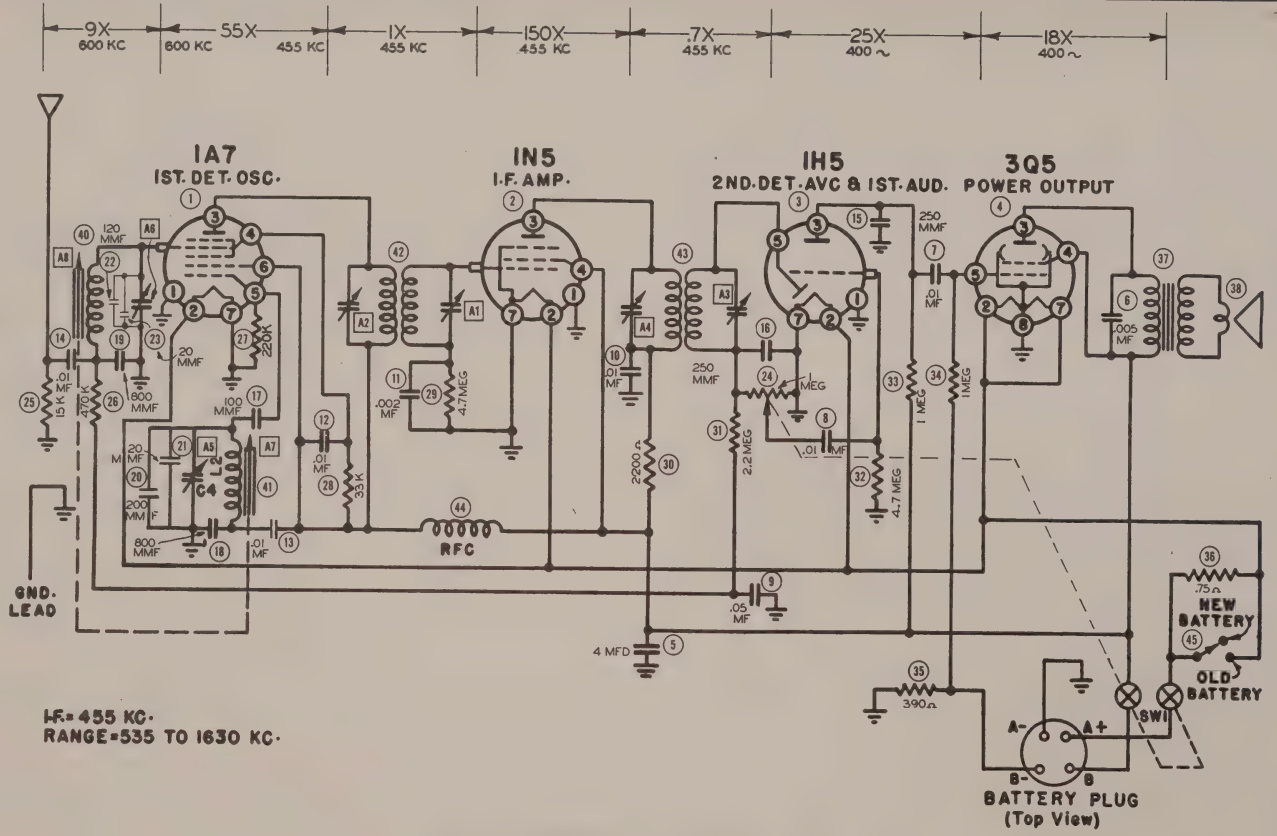

600 KC. SETTING INDICATED BY MARKING ON POINTER SLIDE
1300 KC. SETTING INDICATED BY MARKING ON POINTER SLIDE
POINTER EXTREMES INDICATED BY MARKINGS ON POINTER SLIDE
NOTE:— DIAL AT LOW FREQUENCY END (IRON CORES FULLY IN COILS) 53" OF DIAL CORD REQUIRED

CHASSIS—BOTTOM VIEW



TRUETONE MODEL D2663

TRUETONE MODEL D2663



* DO NOT USE OHMMETER TO MEASURE RESISTANCE OF FILAMENT.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0V.	1.5V.DC	91V.DC	61V.DC	-3.6V.DC	91V.DC	0V.	0V.	0V.
2	1N5GT	0V.	1.5V.DC	88V.DC	91V.DC	0V.	91V.DC	0V.	-1V.DC	1V.DC
3	1H5GT	0V.	1.5V.DC	60V.DC	83V.DC	-2V.DC	0V.	0V.	0V.	0V.
4	3Q5GT	0V.	1.5V.DC	89V.DC	91V.DC	-14V.DC	-5V.DC	1.5V.DC	0V.	

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0Ω	*	300KΩ	300KΩ	205KΩ	300KΩ	*	3 MEG.	3.5MEG.
2	1N5GT	0Ω	*	300KΩ	300KΩ	INF.	300KΩ	*	4 MEG.	4 MEG.
3	1H5GT	0Ω	*	1.3MEG.	300KΩ	900KΩ	4 MEG.	*	INF.	4 MEG.
4	3Q5GT	0Ω	*	300KΩ	300KΩ	850KΩ	380Ω	*	*	

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

471-31

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting AVC line to chassis.

1 - DC Voltage measurements are at 20,000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.

VIEWTONE
MODELS RC-201A, RRC-201

VIEWTONE MODEL RRC-201

TRADE NAME	Viewtone Models RC-201A, RRC-201
MANUFACTURER	Viewtone Co., 203 E.18th St., New York, N.Y.
TYPE SET	AC Operated Combination Phono. - Superheterodyne Radio, Self Contained Loop Antenna
TUBES (FIVE)	Types, 14Q7 Converter, 14A7/12B7 IF Amp., 14B6 Det.-AVC-AF, 50A5 Power Output, 35Y4 Rectifier.
POWER SUPPLY	117 Volts AC
TUNING RANGE—BROADCAST	540-1725KC RATING .257 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

To set pointer turn variable fully closed and set pointer to a horizontal position. Remove receiver front panel from cabinet and fasten to receiver. Use isolation transformer if available, if not connect a capacitor in series with low side of signal generator and chassis. When aligning keep loop in same relative position with chassis as when in cabinet. Volume control should be at maximum and output of signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjustments.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator of rear section of variable. Low side to chassis.	455KC	Variable fully open.	Across voice coil.	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. cap to reduce hum modulation.
	Loop	1500KC	"	"	A5	Connect output of signal generator to a few turns of wire and radiate signal into receiver loop. Adjust for maximum output.
	"	1500KC	Tune for maximum output.	"	A6	"

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: VIEWTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	14Q7	14Q7	8AL	
2	IF Amp.	14A7/12B7	14A7/12B7	8V	
3	Det.-AVC-AF	14B6	14B6	8W	
4	Power Output	50A5	50A5	6AA	
5	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: VIEWTONE PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	50	150		M-5030-150	TA-530	PRSA150-40-40	BRD3515	2N520	Filter-Green
B	30	150							" -Red
7	10	25		M-10-25	TA-10	PRS25-10	BR102A	TC22	Cath. Bypass
8	.001	600		S-6-001	TC-21	684-001	DT6D1	TP404	Line Filter
9	.02	400		S-4-02	TC-12	484-02	DT4S2	TP423	Output Plate Bypass
10	.02	400		S-4-02	TC-12	4c4-02	DT4S2	TP423	Audio Coupling
11	.01	400		S-4-01	TC-11	484-01	DT4S1	TP421	Tone Compensation
12	.01	400		S-4-01	TC-11	484-01	DT4S1	TP421	Audio Coupling
13	.1	400		S-4-1	TC-1	484-.1	DT4P1	TP428	AVC Filter
14	100	500		M0.5-31	1FM-31	1468-0001	5W5T1	MC235	Audio Plate Bypass
15	100	500		M0.5-31	1FM-31	1468-0001	5W5T1	MC235	IF Bypass Vol. Cont.
16	100	500		M0.5-31	1FM-31	1468-0001	5W5T1	MC235	IF Bypass Diode
17	100	500		M0.5-31	1FM-31	1468-0001	5W5T1	MC235	Osc. Grid Capacitor

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: VIEWTONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
18A	500KΩ	1		MR48	D13-133	M-60-Z	Volume Control.
B	Shaft			Not Req.	A	Not Req.	Attach to 18A per instructions
C	Switch			M26	41	SW-A	" " " "
19A	200KΩ	1		UM149	D11-129	M-52-S	Tone Control.
B	Shaft			Not Req.	A	Not Req.	Attach to 19A per instructions

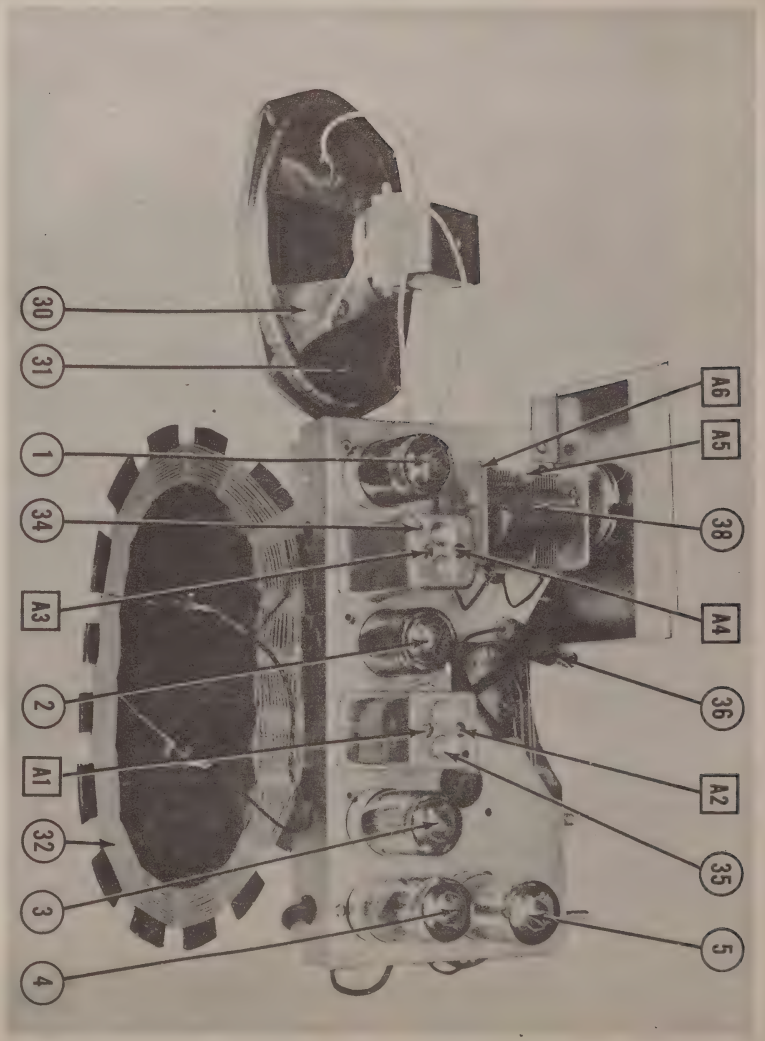
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: VIEWTONE PART No.	IRC PART No.	IDENTIFICATION CODES
20	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
21	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Diode RF Filter
22	270KΩ	½		BTS-270K	Red-Vi.-Yl. Series Phono
23	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
24	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. " " Plate Load
25	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Output Grid
26	160Ω	½		BW-½-150	Br.-Blue-Br. " Cathode
27	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
28	1000Ω	1		BTA-1000	Br.-Blk.-Red Filter

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: VIEWTONE PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
29	1900Ω	3Ω	90Ω	.7Ω		A-3876	T22S45		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA VIEWTONE PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-108		
30	PM	3Ω		Mod.PS-X		
	CONE DIA.	VC DIA				
31	6"	2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA VIEWTONE PART No.	MEISSNER PART No.	INSTALLATION NOTES
32	Loop		1.5Ω			
33	Osc. Coil		6Ω			
34	Input IF	16Ω	15.5Ω		16-6658	
35	Output IF	14.5Ω	14.5Ω		16-6660	

DIAL LIGHT

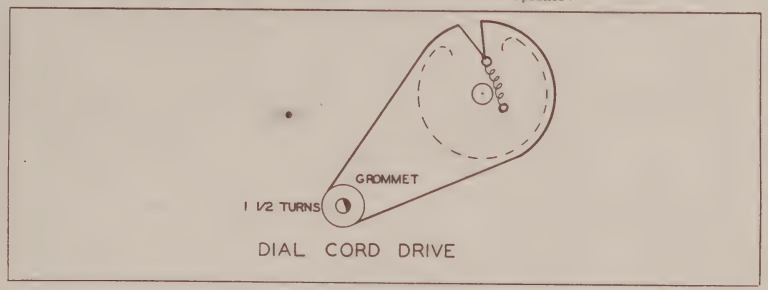
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA VIEWTONE PART No.		INSTALLATION NOTES
36	Bayonet	6-8	0.15	Brown			Type 47

MISCELLANEOUS

ITEM No.	PART NAME	VIEWTONE PART No.	NOTES
37	Switch		Radio-Phono
38	Tuning Cap.		2 Gang Var. Cap.

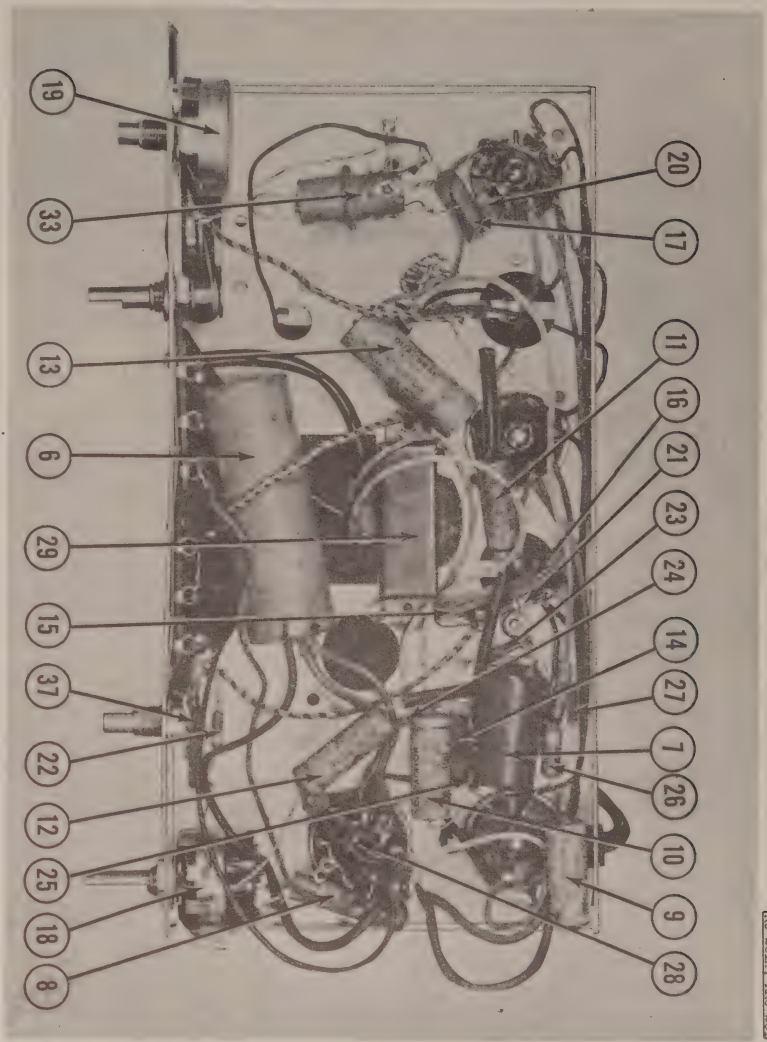
DISASSEMBLY INSTRUCTIONS

1. Remove the set screw type control knobs from the radio receiver.
2. Remove the two flat-head screws from dial panel board.
3. Remove the hex nuts from the radio-phono and tone control bushings.
4. Disconnect the speaker, phono-motor, and pickup plugs from their respective receptacles.
5. Remove chassis and loop antenna from cabinet.
   NOTE: Chassis and loop antenna are not fastened to cabinet. Loop is pressed into left side and chassis is held to front control panel by means of nuts on radio-phono and tone control bushings.
6. Remove two wood screws holding speaker to cabinet. Remove speaker.

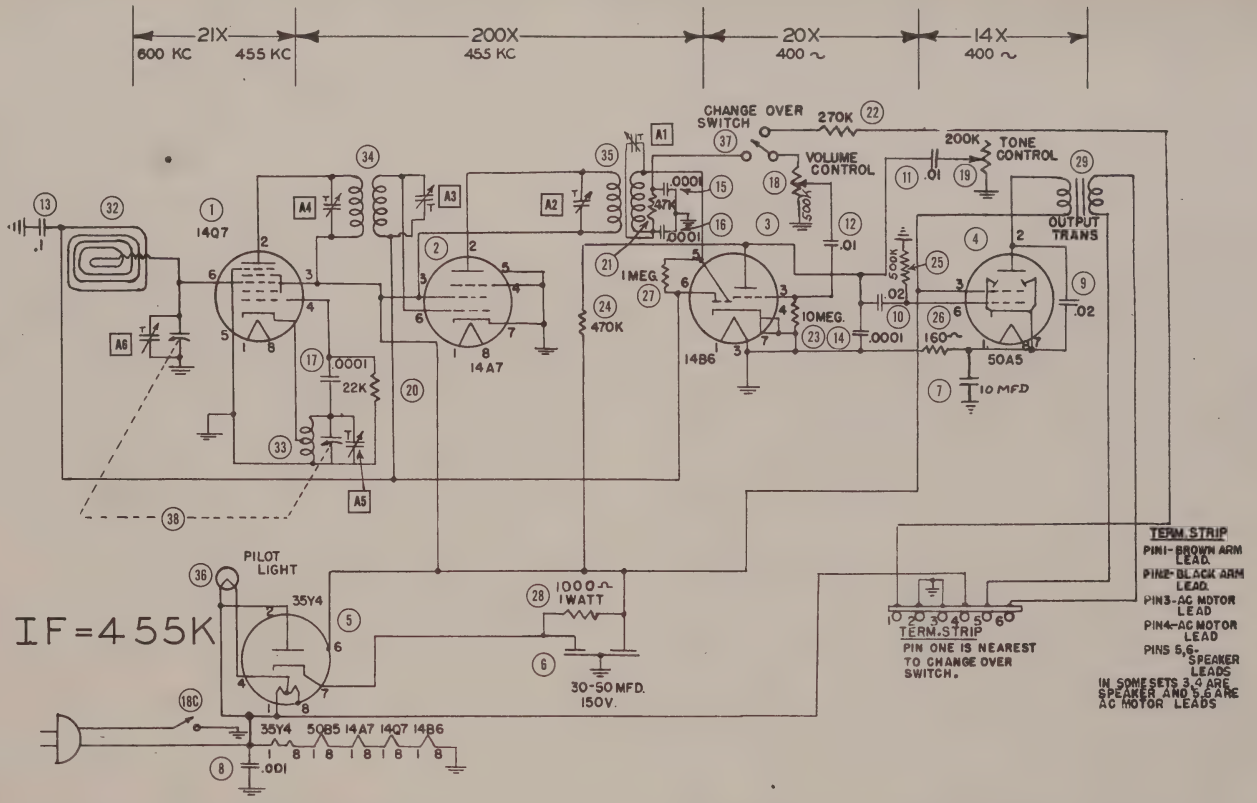


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



VIEWTONE MODELS RC-201A, RRC-201



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	24 V.AC	93 V.DC	93V.AC	–5.1V.DC	0V.	–7 V.DC	0V.	11V.AC
2	14A7/12B7	36 V.AC	93 V.DC	93V.AC	0V.	0V.	–7 V.DC	0V.	24 V.AC
3	14B6	11V.AC	58V.DC	–8V.DC	0V.	–7 V.DC	–7 V.DC	0V.	0V.
4	50A5	87 V.AC	118 V.DC	93V.DC	0V.	0V.	0V.	5.6V.DC	36 V.AC
5	35Y4	117 V.AC	113V.AC	0V.	113 V.AC	0V.	93V. DC	120V.DC	87 V. AC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	25Ω	22KΩ	22KΩ	20KΩ	0Ω	1.3MEG.	5Ω	12Ω
2	14A7/12B7	34Ω	22KΩ	22KΩ	0Ω	0Ω	1.3MEG.	0Ω	25Ω
3	14B6	12Ω	500KΩ	8MEG.	0Ω	520KΩ	1.3MEG.	0Ω	0Ω
4	50A5	75Ω	22KΩ	22KΩ	INF.	INF.	480KΩ	135Ω	34Ω
5	35Y4	99Ω	96Ω	INF.	96Ω	INF.	22KΩ	22KΩ	75Ω

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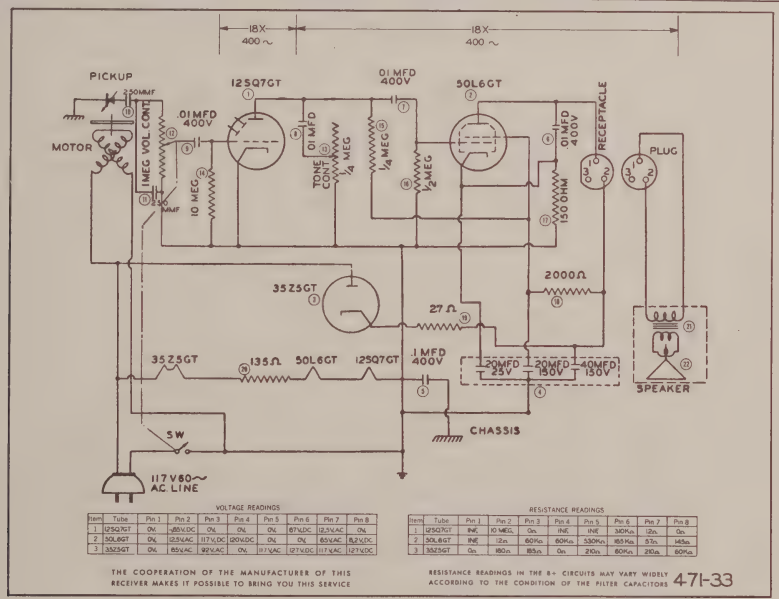
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

VOGUE MODEL 532A-P

TRADE NAME	Vogue, Model 532 A-P
MANUFACTURER	Sheridan Electronics Corp., 2850 So. Michigan Ave., Chicago, Ill.
TYPE SET	AC Operated Portable Record Player with 3 Tube Amplifier & Speaker
TUBES	(THREE) Types 12SQ7GT AF Amp., 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC RATING - .235 Amps. @ 117 Volts AC



1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: VOGUE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	AF Amp.	12SQ7GT	12SQ7GT	8Q	
2	Power Output	50L6GT	50L6GT	7AC	
3	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: VOGUE PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
4A	40	150	15-2	DY-304	EL-343	AF84D4A	UP4CJ2	FP306	◗ Filter
B	20	150							▲ "
C	20	25							Cath. Bypass
5	.1	600	16-227	S-6-1	TC-1	684-.1	DT6P1	TP418	Line Isolation
6	.01	400	16-218	S-4-01	TC-11	484-01	DT4S1	TP421	Output Plate Bypass
7	.01	400	16-218	S-4-01	TC-11	484-01	DT4S1	TP421	Audio Coupling
8	.01	400	16-218	S-4-01	TC-11	484-01	DT4S1	TP421	Tone Compensation
9	.01	400	16-218	S-4-01	TC-11	484-01	DT4S1	TP421	Audio Coupling
10	250	500		MO.5-325	1FM-325	1468-00025	5WST25	MC240	Phono Coupling *
11	250	500		MO.5-325	1FM-325	1468-00025	5WST25	MC240	Phono Bypass *

*Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: VOGUE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
12A	1 Meg.	1	26-Y-8	UM159	D11-137	M-61-Z	Volume Control.
B	Shaft		Not Req.	SS1	A	Not Req.	Attach to 12A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
13A	250KΩ	1	26-A-2	UM149	D11-130	M-55-S	Tone Control
B	Shaft		Not Req.	SS1	A	Not Req.	Attach to 13A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: VOGUE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
14	10 Meg.	½	25-197	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
15	250KΩ	½	25-130	BTS-270K	Red-Grn.-Yl. AF Plate Load
16	500KΩ	½	25-186	BTS-470K	Grn.-Blk.-Yl. Output Grid
17	150Ω	1	25-216	BW-1-150	Br.-Grn.-Br. " Cathode
18	1900Ω	½		BTS-1800	Br.-White-Red Filter
19	24Ω	½		BW-½-27	Red-Yl.-Blk. Surge Limiter
20	135Ω	5	25-28	AEA-150†	Line Dropping

† Set slider at 135Ω from one end.

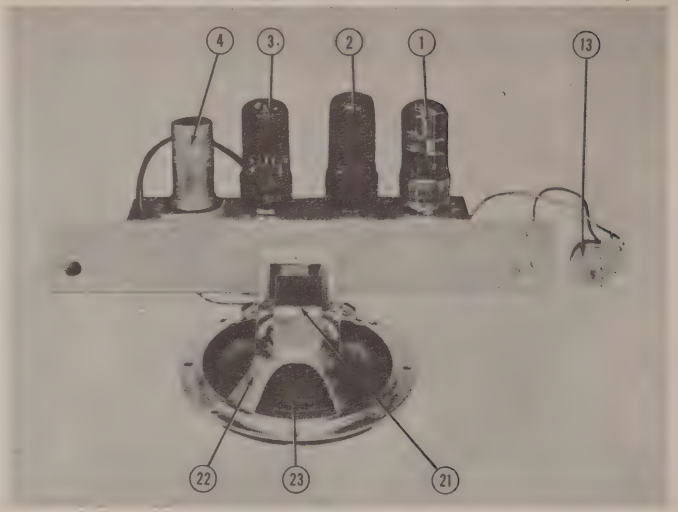
TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: VOGUE PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
21	2200Ω	3.1Ω	230Ω	.75Ω	Part of 45-Y-4	A-3876	T-22845		

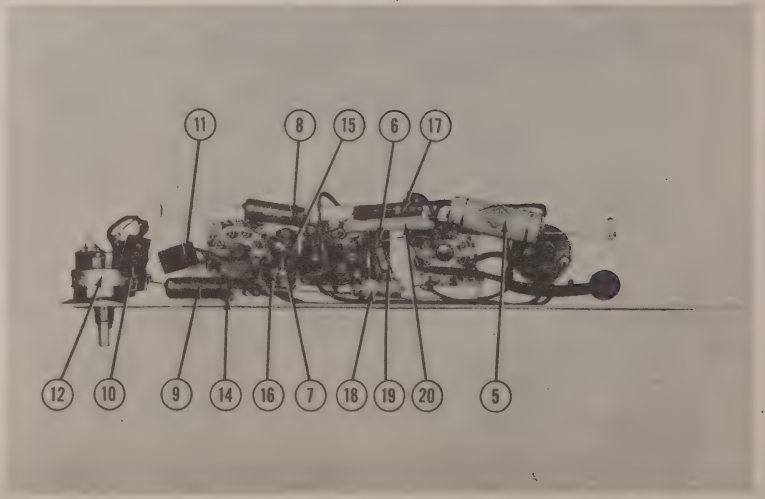
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: VOGUE PART No.	REPLACEMENT DATA: JENSEN PART No.		INSTALLATION NOTES
22	FIELD RM	VC IMP. 3.1Ω	45-Y-4	ST-105 Mod.P5-X		
23	CONE DIA. 4-3/4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

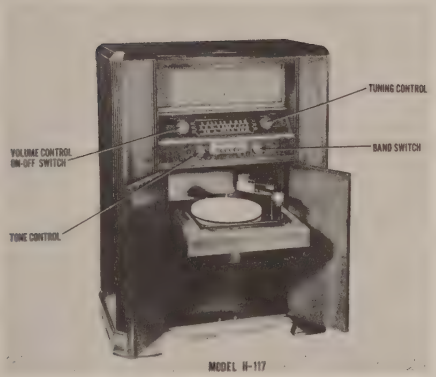
CHASSIS—TOP VIEW



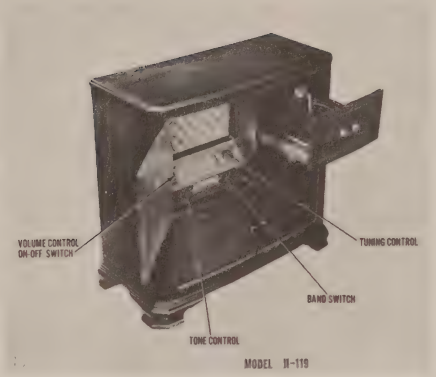
CHASSIS—BOTTOM VIEW



WESTINGHOUSE
MODELS H-117, H-119



MODEL H-117



MODEL H-119

WESTINGHOUSE MODEL H-119

TRADE NAME	Westinghouse, Model H-119
MANUFACTURER	Westinghouse Electric Corp., Receiver Div., Sunbury Pa.
TYPE SET	AC Operated Combination Automatic Phonograph - Superheterodyne Receiver for Broadcast and FM Bands with Automatic Tuning and Self Contained Loop Antenna.
TUBES (FOURTEEN)	Types, 6SG7 RF Amp., 6SB7Y Converter, 6SG7 1st IF Amp., 6SG7 2nd IF Amp., 6SJ7GT Limiter, 6H6GT Discriminator, 6H6GT AVC-Det., 6SQ7GT 1st AF, 6SQ7GT Phase Inverter, 2-6Y6G Power Output, 6SJ7GT Noise Rectifier, 5U4G Rectifier, 6E5 Tuning Eye.
POWER SUPPLY	117 Volts AC
RATING	1.27 Amp. @ 117 Volts AC
TUNING RANGE-	BROADCAST 530-1750 KC SHORT WAVE 4.85 - 18.0 MC FM 88-108 MC

PUSHBUTTON ADJUSTMENTS

The six pushbuttons and associated adjustments from left to right (facing front of receiver) cover the following frequency ranges: 530 to 900KC, 530 to 900KC, 530 to 900KC, 900 to 1600KC, 900 to 1600KC, and 900 to 1600KC. To set up six different stations for automatic tuning, proceed as follows:

1 - Turn on radio and allow at least 5 minutes to warm up before making adjustment.

2 - List six desired stations arranged in order from low to high frequencies.

3 - Set Phono-band Switch to Broadcast band manual tuning, tune in first station on list (lowest frequency).

4 - Set Phono-band Switch for push-button tuning and depress button to extreme left (viewed from front). Adjust B1 to tune in station. Lowest frequency is with screw all the way in.

5 - Adjust B2 for maximum volume of station.

6 - Repeat adjustments.

7 - Follow same procedure for setting up remaining push buttons. Always select a station within frequency range of push button and associated adjustments. B3, B5, B7, B9, B11 are adjusted to tune in station. B4, B6, B8, B10, B12 are adjusted for maximum volume of station.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SG7	6SG7	8S	
2	Converter	6SB7Y	6SB7Y	8R	
3	IF Amp.	6SG7	6SG7	8S	
4	2nd IF	6SG7	6SG7	8S	
5	Limiter	6SJ7GT	6SJ7GT	8N	
6	Discriminator	6H6GT	6H6GT	7Q	
7	AVC-Det	6H6GT	6H6GT	7Q	
8	1st AF	6SQ7GT	6SQ7GT	8Q	
9	Phase Inverter	6SQ7GT	6SQ7GT	8Q	
10	Power Output	6Y6G	6Y6G	7AC	
11	Power Output	6Y6G	6Y6G	7AC	
12	Noise Rectifier	6SJ7GT	6SJ7GT	8N	
13	Rectifier	5U4G	5U4G	5T	
14	Tuning Eye	6E5	6E5	6R	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: WESTING-HOUSE PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
15A	40	450	V3302	DY-4061	EL-4241	AF4444J	UF9BJ39		▲ Filter
B	40	450							■ "
C	18	350				RS350-16	BR1635		▲ "
16	20	25		M-25-25	TA-25	PRS25-25	BR252A	TC26	Output Cath. Bypass
17	.05	600		S-6-05	TC-15	684-05	DT6S5	TP415	Line Bypass
18	.05	600		S-6-05	TC-15	684-05	DT6S5	TP415	" "
19	.01	400		S-4-01	TC-11	484-01	DT4S1	TP421	Audio Coupling
20	.006	600		S-6-006	TC-26	684-006	DT6D6	TP409	Tone Compensation
21	.01	400		S-4-01	TC-11	484-01	DT4S1	TP421	Audio Coupling
22	.001	600		S-6-001	TC-21	684-001	DT6D1	TP404	Tone Compensation
23	.01	400		S-4-01	TC-11	484-01	DT4S1	TP421	" "
24	.01	400		S-4-01	TC-11	484-01	DT4S1	TP421	Audio Coupling
25	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	AVC Filter
26	.01	400		S-4-01	TC-11	484-01	DT4S1	TP421	" "
27	.02	400		S-4-02	TC-12	484-02	DT4S2	TP423	RF Bypass
28	.1	400		S-4-1	TC-1	484-.1	DT4P1	TP428	" "
29	.001	600		S-6-001	TC-21	684-001	DT6D1	TP404	RF Bypass Disc.
30	.01	400		S-4-01	TC-11	484-01	DT4S1	TP421	RF Bypass Pwr. Supp.
31	.01	400		S-4-01	TC-11	484-01	DT4S1	TP421	Conv. Screen Bypass
32	.01	400		S-4-01	TC-11	484-01	DT4S1	TP421	AVC Filter
33	.05	400		S-4-05	TC-15	484-05	DT4S5	TP426	Conv. Grid Bypass
34	.01	400		S-4-01	TC-11	484-01	DT4S1	TP421	Audio Coupling
35	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	Output Plate Bypass
36	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	" " "
37	470	500		MO.5-35	1FM-35	1468-0005	5W5T5	MC245	Tone Compensation
38	220	500		MO.5-32	1FM-32	1468-0002	5W5T2	MC237	Audio Plate Bypass
39	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	Lim. Screen Bypass
40	47	500		MO.5-45	1FM-45	1468-00005	5W5Q5	MC225	IF Coupling FM
41	22	500		MO.5-425	MS-42	1468-000025	5W5Q2	MC220	AVC Coupling
42	5000	500		MW.5-25	1FM-25	1467-005	1D5D5	MC465	2nd IF Screen Bypass
43	5000	500		MW.5-25	1FM-25	1467-005	1D5D5	MC465	RF Bypass Pwr. Supp.
44	22	500		MO.5-425	MS-42	1468-000025	5W5Q2	MC220	IF Coupling
45	47	500		MO.5-45	1FM-45	1468-00005	5W5Q5	MC225	RF Bypass Diode
46	5000	500		MW.5-25	1FM-25	1467-005	1D5D5	MC465	1st IF Screen Bypass
47	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	RF Bypass Pwr. Supp.
48	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	AVC Filter
49	220	500		MO.5-32	1FM-32	1468-0002	5W5T2	MC237	Phono Tone Comp.
50	500								Conv. Screen Bypass Cer
51	470	500		MO.5-35	1FM-35	1468-0005	5W5T5	MC245	Conv. Fil. Bypass
52	100			MO.5-31	1FM-31	1468-001	1W5D1	MC235	RF Coupling
53	3800	500							Fixed Padder
54	50								Osc. Grid Capacitor Cer
55	180	500							Fixed Padder
56	2200	500							Fixed Trimmer
57	220	500		MO.5-32	1FM-32	1468-0002	5W5T2	MC237	RF Filament Bypass
58	10000	300		MW.3-11	1FM-11	1467-01	1D3S1	MC475	RF Screen Bypass
59	100								RF Coupling Cer.
138	47	500		MO.5-45	1FM-45	1468-00005	5W5Q5	MC225	Conv. Fil. Bypass

†Do not use bypass section.
‡Parallel sections to obtain desired capacity.

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING: RESIST-ANCE	RATING: WATTS	REPLACEMENT DATA: WESTINGHOUSE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
60A	2 Meg.	1	V-3293	DTM-296	D13-139XX		Volume Control
B	Shaft		Not Req.	Not Req.	A		Attach to 60A per instructions
C	Switch		" "	M26	41		" " " " "
61A	1 Meg.	1	V-3305	MR53	D13-137	M-63-Z	Tone Control.
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 61A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
62	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. RF Grid
63	33KΩ	½		BTS-33K	Or.-Or.-Or. " Screen Dropping
64	5600Ω	½		BTS-5600	Grn.-Blue-Red " Plate Load
65	220Ω	½		BW-½-220	Red-Red-Br. Converter Grid
66	1800Ω	½		BTS-1800	Br.-Gray-Red " Cathode
67	15KΩ	½		BTS-15K	Br.-Grn.-Or. " Grid
68	56Ω	½		BW-½-56	Grn.-Blue-Blk. Parasitic Suppressor
69	220Ω	½		BW-½-220	Red-Red-Br. SW Oscillator Coil Shunt
70	22KΩ	½		BTS-22K	Red-Red-Or. " Grid
71	15KΩ	3		AB-15,000	Br.-Grn.-Or. Converter Screen Dropping
72	100Ω	½		BW-½-100	Br.-Blk.-Yl. Series Oscillator Grid
73	22KΩ	½		BTS-22K	Red-Red-Or. " 1st IF "
74	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 1st IF Screen Dropping
75	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
76	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. " Diode Load
77	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. " Network
78	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. " "
79	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 2nd IF Screen Dropping
80	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Limiter Grid
81	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. Tuning Eye Grid
82	33KΩ	1		BTS-33K	Or.-Or.-Or. Voltage Dropping Limiter
83	68KΩ	½		BTS-68K	Blue-Gray-Or. Discriminator RF Filter
84	100KΩ	½		BTS-100K	Br.-Blk.-Yl. " Load
85	100KΩ	½		BTS-100K	Br.-Blk.-Yl. " "
86	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Detector Diode "
87	100KΩ	½		BTS-100K	Br.-Blk.-Yl. " RF Filter
88	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. Phono Audio Voltage Divider
89	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. " " "
90	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Tone Compensation
91	56Ω	½		BW-½-56	Grn.-Blue-Blk. Tuning Eye Cathode
92	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Tuning Eye Plate Load
93	10 Meg.	½		BTS-10 Meg.	Br.-Blk.Blue 1st AF Grid
94	220KΩ	½		BTS-220K	Red-Red-Yl. " " Plate Load
95	150KΩ	½		BTS-150K	Br.-Grn.-Yl. Phase Inverter Plate Load
96	1.5 Meg.	½		BTS-1.5 Meg.	Br.-Grn.-Grn. Tone Compensation
97	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. " "
98	47KΩ	½		BTS-47K	Yl.-Vi.-Or. " "
99	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Phase Inverter Grid
100	220KΩ	½		BTS-220K	Red-Red-Yl. Output Grid
101	270KΩ	½		BTS-270K	Red-Vi.-Yl. Output Grid
102	100Ω	½		BW-½-100	Br.-Blk.-Br. Parasitic Suppressor
103	100Ω	½		BW-½-100	Br.-Blk.-Br. " "
104	10Ω	½		BW-½-10	Br.-Blk.-Blk. " "
105	10Ω	½		BW-½-10	Br.-Blk.-Blk. " "
106	4700Ω	2		BT-2-4700	Yl.-Vi.-Red Screen Dropping
107	15KΩ	3		AB-15,000	Br.-Grn.-Or. Bleeder
108	68Ω	2		BW-2-68	Blue-Gray-Blk. Bias
109	120Ω	10		AB-150	Br.-Red-Br. Output Cathode See Note 1
110	100Ω	2		BW-2-100	Br.-Blk.-Br. Surge Limiter See Note 2
111	100Ω	2		BW-2-100	Br.-Blk.-Br. " " " " 2
112	15KΩ	3		AB-15,000	Br.-Grn.-Or. Bleeder " " " 3

Note 1: On IRC replacement set slider at 120Ω from one end.
Note 2: Not used in all models.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA WESTINGHOUSE PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDARSON PART No.	INSTALLATION NOTES
113	117V AC @ 1.27A	620V CT @ 175A	5.6V AC @ 3.0A	6.9V AC @ 6.1A	V-3295	P-6315*	T22R07	*Add filter resistor in series with speaker field coil to reduce voltage to normal

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA WESTINGHOUSE PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.		INSTALLATION NOTES
114A	5000Ω CT	8Ω	225Ω CT	.7Ω		A-3880	T22S58#		#Drill one new mounting hole. Used in Model W-119.
B	7300Ω CT	1.8Ω	280Ω CT	.3Ω					Used in Model W-117.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA WESTINGHOUSE PART No.	REPLACEMENT DATA JENSEN PART No.		INSTALLATION NOTES
	FIELD RES.	VC IMP.				
115A	220Ω	6Ω	V-3892			Used in Model W-119
B	450Ω	3.7Ω	V-3612			Two speakers used in parallel in Model W-117.
C	460Ω	3.7Ω	V-3613			
	CONE DIA.	VC DIA.				
116A	11-5/4"	1-1/4"				
116B&C	7-3/8"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA WESTINGHOUSE PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
117	Loop	0Ω				
118	BC Ant. Coil		2.9Ω			
119	SW Ant. "	.5Ω	0Ω			
120	FM Ant. "		0Ω			
121	BC RF "		3.5Ω			
122	SW RF "		.3Ω			
123	FM RF "		0Ω			
124	BC Osc. "		4.5Ω		14-1040	
125	SW Osc. "		.3Ω			
126	FM Osc. "		0Ω			
127	Osc.Cath. "	2.1Ω				
128	Conv. Osc. Grid Choke	0Ω				
129A	1st IF 455KC	4.5Ω★	4.3Ω			129A & 129B both in same can
129B	" " 10.7MC		.8Ω			
130A	2nd " 455KC	5.3Ω✦	5.8Ω✦			130A & 130B " " " "
130B	" " 10.7MC					
131A	3rd " 455KC	10Ω	7.8Ω			131A & 131b " " " "
131B	" " 10.7MC	.5Ω				No 10.7MC IF secondary.
132	Disc. IF	1Ω	.6 & .6		—	Tapped secondary

★ Includes both IF primaries.
✦ " " " " and both secondaries.

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA WESTINGHOUSE PART No.		INSTALLATION NOTES
133	Bayonet	6-8	0.25	Blue			Type 44
134	Bayonet	6-8	0.25	Blue			Type 44

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	WESTINGHOUSE PART No.	NOTES
135	Band Switch		
136	Pushbutton Assembly		
137	Tuning Gang		

ALIGNMENT INSTRUCTIONS

To set dial pointer turn variable fully closed and set pointer at the last reference mark at the left end of the dial. Connect a 100KΩ resistor across the loop terminals. Set volume control at maximum volume and keep output of signal generator no higher than is necessary to obtain output reading. Use a vacum tube voltmeter, preferably zero centered, as an output indicator for all FM adjustments. Before installing chassis in cabinet, place chassis near cabinet and connect loop. Tune in a weak signal near 1400KC and adjust A9 for maximum output. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to pin #3 of 6SB7. Low side to chassis.	455KC	BC	High freq. end	Across voice coil	A1,A2, A3,A4, A5,A6.	Adjust for maximum output.
200 MMF.	High side to ext. BC ant. Low side to chassis.	1500KC	"	1500KC	"	A7	"
200 MMF.	"	"	"	Tune for maximum output.	"	A8,A9.	"
200 MMF.	"	600KC	"	"	"	A10	Rock variable and adjust for maximum output. Repeat last three steps until no further improvement can be made.
400 OHMS	High side to ext. SW ant. Low side to chassis.	18.0MC	SW	18.0MC	"	A11.	Adjust for maximum output.
400 OHMS	"	15.0MC	"	Tune for maximum output.	"	A12, A13.	Rock variable and adjust for maximum output.

Do not attempt alignment of the FM Band unless a vacuum tube voltmeter is available for use as an output indicator.

.1 MFD.	High side to pin #3 of 6SB7. Low side to chassis.	10.7 MC (Modulation off)	FM	108MC	VTVM connected to pin#4(grid) of 6SJ7 Limiter (5) and chassis	A14, A15, A16, A17, A18.	Adjust for maximum output with minimum input from signal generator.
.1 MFD.	High side to pin #4 (grid) of 2nd IF Amp. (4). Low side to chassis.	"	"	"	VTVM across disc.diode load resistor (8S)	A19	Adjust for maximum output.
.1 MFD.	"	"	"	"	VTVM connected to test jack on rear of chassis near speaker plug.	A20	Adjust for zero output. Swing signal generator 75KC above and 75KC below IF freq. and record both readings. If not equal, repeat last two steps and check again. It may be necessary to adjust A20 slightly to get these readings equal. This adjustment is very critical as misadjustment will cause distortion of FM reception.
40Ω carbon	High side to FM ant. terminal. Low side to chassis.	102.0MC	"	102.0MC	VTVM connected to pin #4 (grid) of 6SJ7 Limiter (5) and chassis	A21, A22, A23.	Adjust for maximum output in given order.

VOLTAGE READINGS

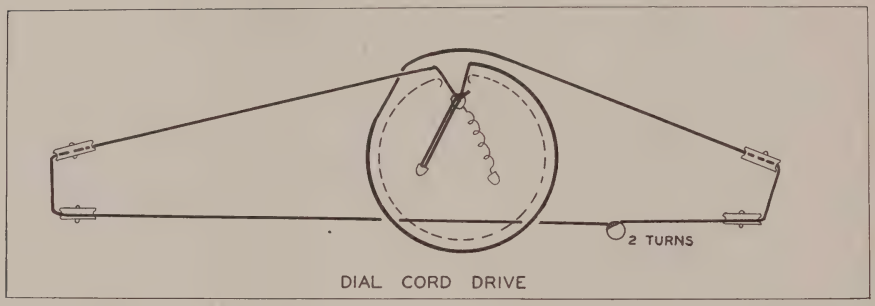
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SG7	0V.	0V.	0V.	-3V.DC	0V.	171V.DC	6.9V.AC	225V.DC
2	6SB7Y	0V.	0V.	285V.DC	102V.DC	75V.DC	1V.DC	6.9V.AC	0V.
3	6SG7	0V.	0V.	0V.	-3.4V.DC	0V.	132V.DC	6.9V.AC	282V.DC
4	6SG7	0V.	0V.	0V.	-.8V.DC	0V.	117V.DC	6.9V.AC	280V.DC
5	6SJ7GT	0V.	0V.	0V.	-.2V.DC	0V.	65V.DC	6.9V.AC	65V.DC
6	6H6GT	0V.	0V.	-.5V.DC	0V.	-.5V.DC	-.5V.DC	6.9V.AC	0V.
7	6H6GT	0V.	0V.	-.6V.DC	0V.	-.7V.DC	280V.DC	6.9V.AC	0V.
8	6SQ7GT	0V.	-.45V.DC	0V.	0V.	0V.	127V.DC	6.9V.AC	0V.
9	6SQ7GT	-3V.DC	-3.2V.DC	-3V.DC	-3V.DC	-3V.DC	107V.DC	6.9V.AC	0V.
10	6Y6G	0V.	0V.	270V.DC	145V.DC	-1.2V.DC	0V.	6.9V.AC	12V.DC
11	6Y6G	0V.	0V.	270V.DC	125V.DC	-1.5V.DC	0V.	6.9V.AC	12V.DC
12	6SJ7GT	0V.	0V.	0V.	-3.7V.DC	-3V.DC	0V.	6.9V.AC	0V.
13	5U4G	0V.	315V.DC	0V.	312V.AC	0V.	312V.AC	0V.	315V.DC

RESISTANCE READINGS

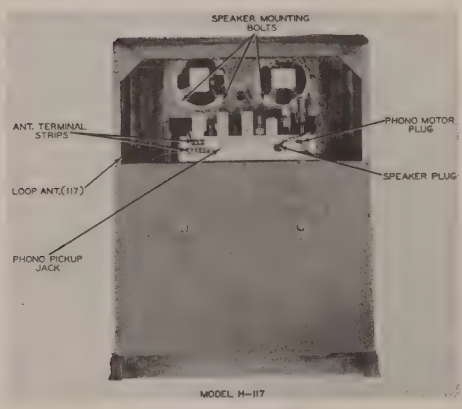
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SG7	0Ω	0Ω	0Ω	3.5MEG.	0Ω	48KΩ	∞	18KΩ
2	6SB7Y	0Ω	0Ω	13KΩ	28KΩ	20KΩ	62Ω	∞	13KΩ
3	6SG7	0Ω	0Ω	0Ω	1.2 MEG.	0Ω	110 KΩ	∞	13KΩ
4	6SG7	0Ω	0Ω	0Ω	850KΩ	0Ω	110KΩ	∞	13KΩ
5	6SJ7GT	0Ω	0Ω	0Ω	420KΩ	0Ω	48KΩ	∞	48KΩ
6	6H6GT	0Ω	0Ω	100KΩ	200KΩ	100KΩ	100KΩ	∞	0Ω
7	6H6GT	0Ω	0Ω	800KΩ	0Ω	90KΩ	13KΩ	∞	0Ω
8	6SQ7GT	0Ω	9 MEG.	0Ω	0Ω	0Ω	220KΩ	∞	0Ω
9	6SQ7GT	62Ω	93KΩ	62Ω	62Ω	62Ω	105KΩ	∞	0Ω
10	6Y6G	INF.	0Ω	13KΩ	13KΩ	350KΩ	INF.	∞	165Ω
11	6Y6G	INF.	0Ω	13KΩ	13KΩ	295KΩ	INF.	∞	165Ω
12	6SJ7GT	0Ω	0Ω	7Ω	1.2MEG.	62Ω	7Ω	∞	7Ω
13	5U4G	INF.	13KΩ	INF.	90Ω	INF.	92Ω	INF.	13KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

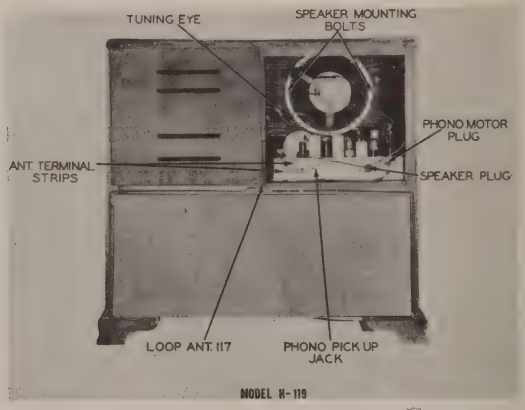
1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.



DIAL CORD DRIVE



MODEL H-117

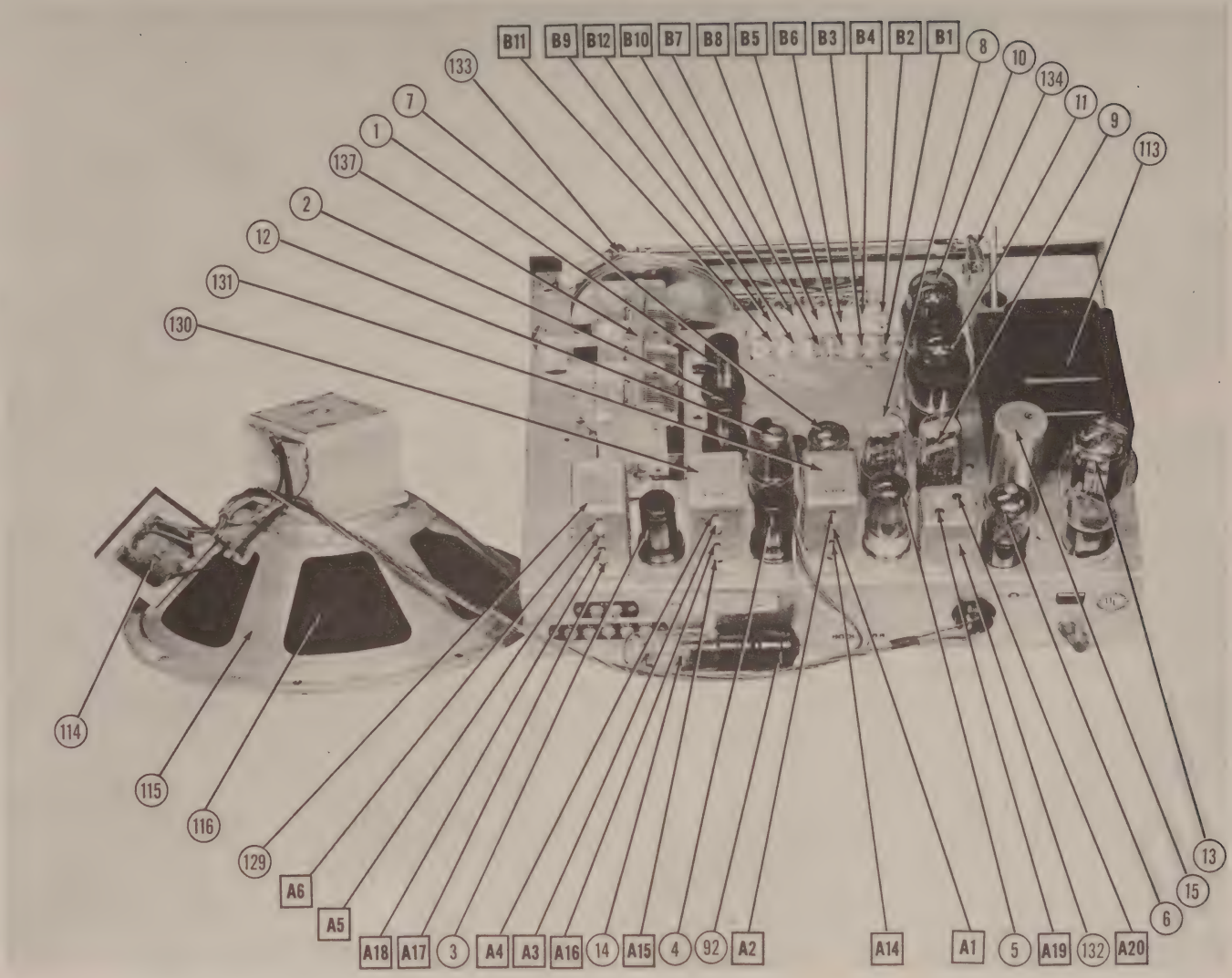


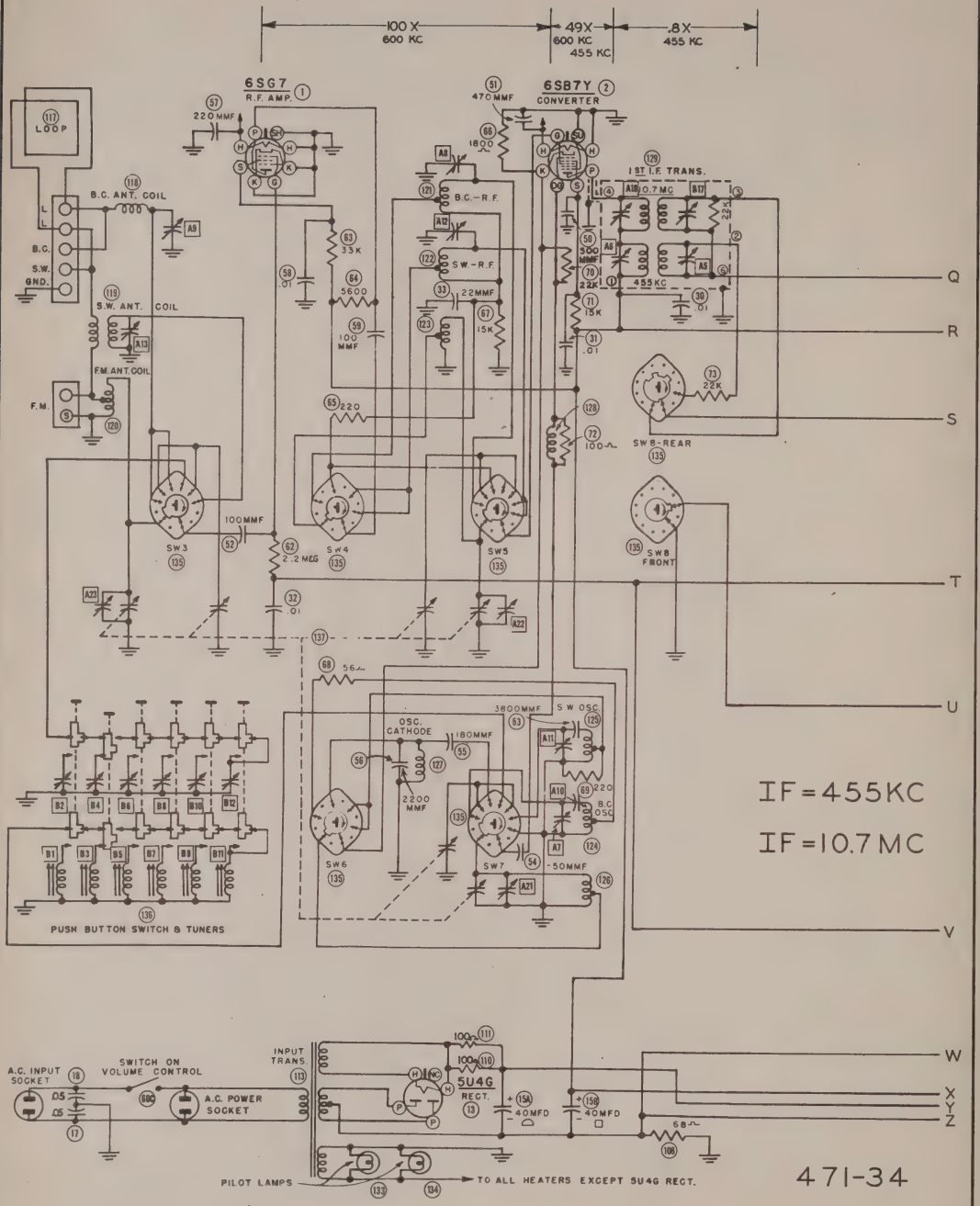
MODEL H-119

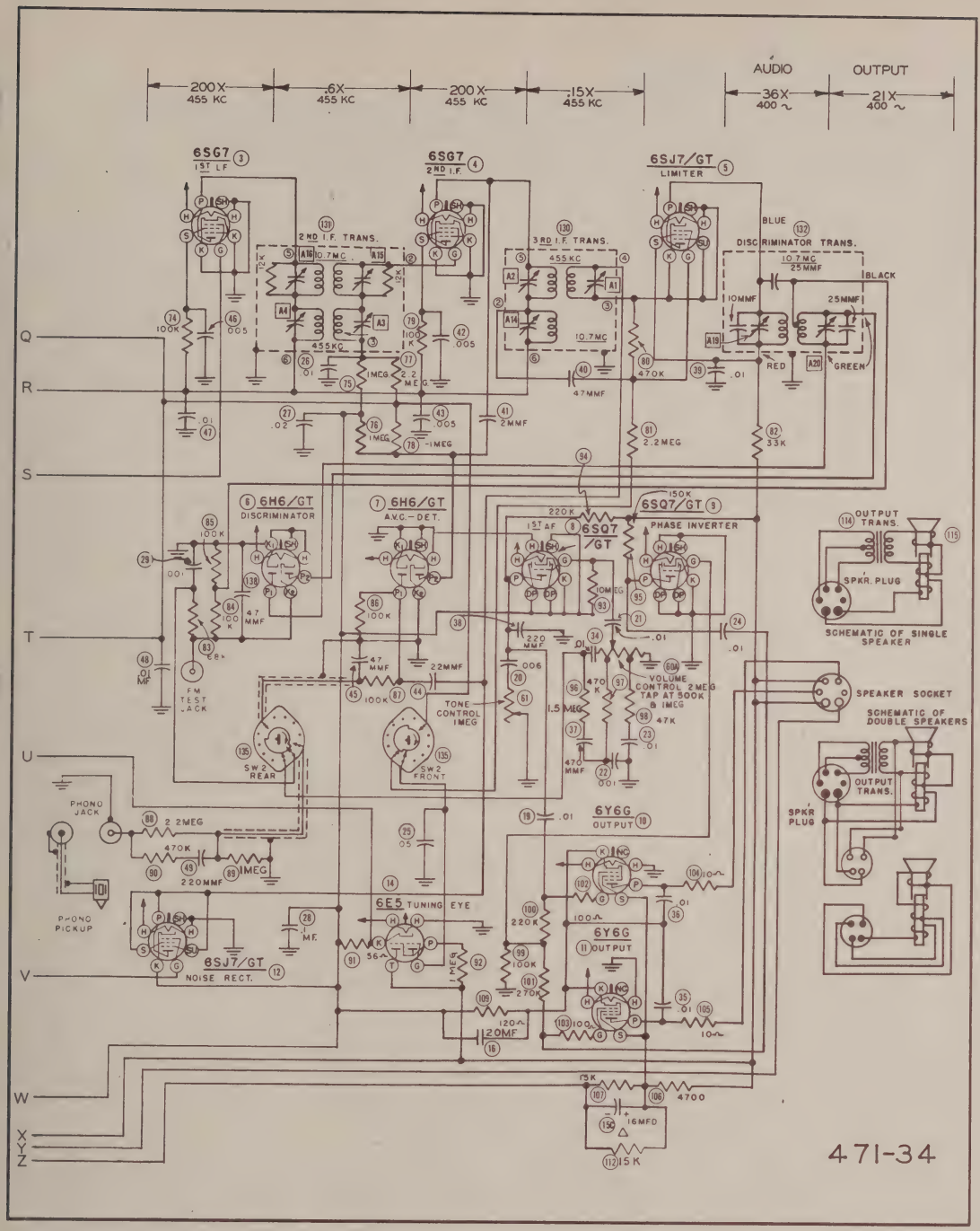
DISASSEMBLY INSTRUCTIONS

1. Remove the push-on type knobs and felt washers.
2. Disconnect the phono-motor plug from chassis.
3. Disconnect the phono-pickup plug from the chassis.
4. Remove set screw from speaker plug and disconnect speaker from chassis.
5. Remove tuning eye tube from bracket.
6. Remove the antenna lugged leads by loosening the set screws on back of chassis.
7. Remove the four hex head machine screws, washers and rubber spacers holding chassis to cabinet. Remove chassis.
8. Remove six hex head nuts and lock washers holding speaker to cabinet. Remove speaker.

CHASSIS—BOTTOM VIEW



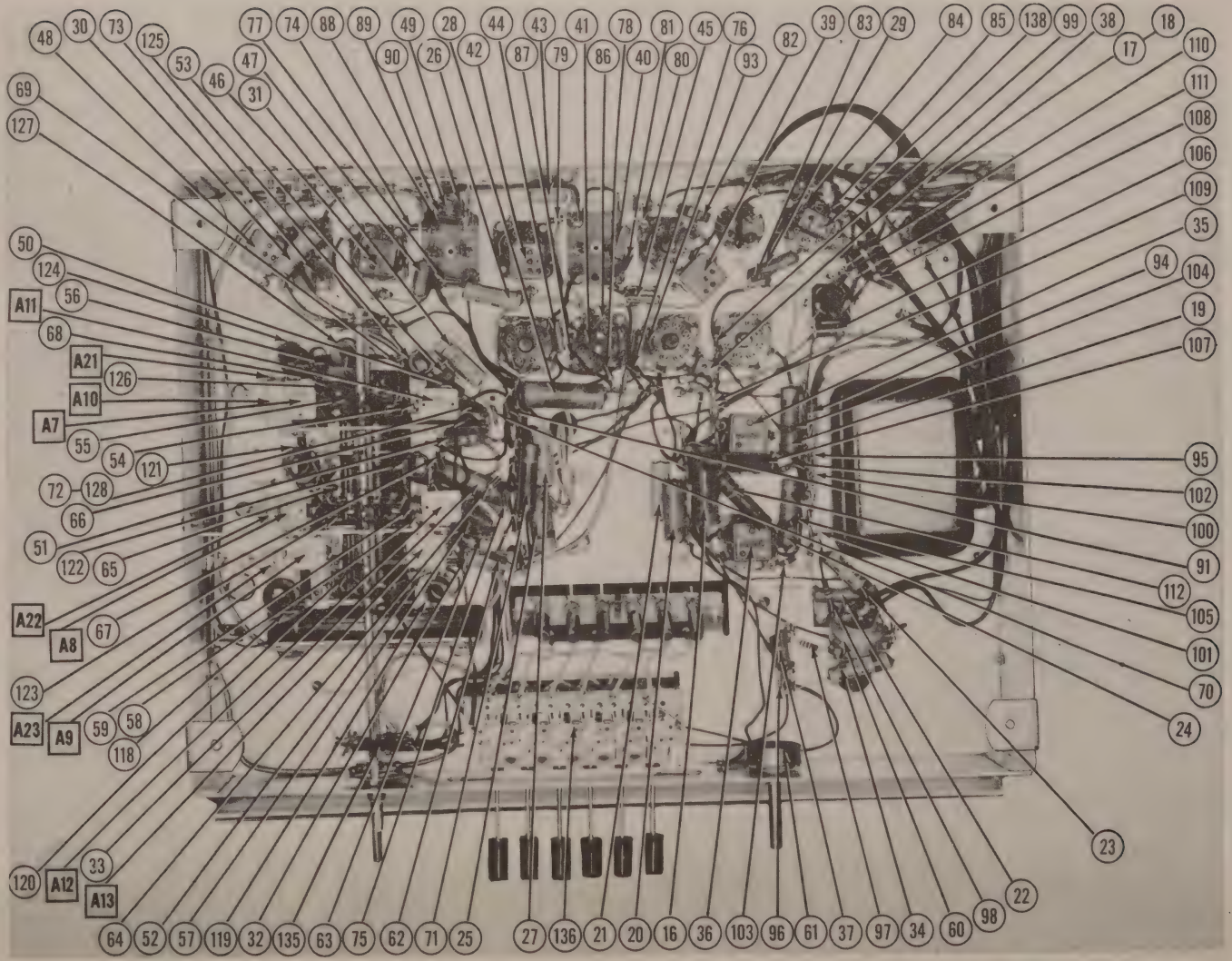

100 X
600 KC
49X
600 KC
455 KC
8X
455 KC
6SG7
R.F. AMP.
6SB7Y
CONVERTER
LOOP
B.C. ANT. COIL
S.W. ANT. COIL
F.M. ANT. COIL
F.M.
B.C.
S.W.
GND.
B.C.-R.F.
SW.-R.F.
1ST I.F. TRANS.
10.7 MC
455 KC
SW8-REAR
SW8 FRONT
SW3
SW4
SW5
SW6
SW7
SW OSC
B.C. OSC
OSC. CATHODE
PUSH BUTTON SWITCH & TUNERS
IF=455KC
IF=10.7MC
A.C. INPUT SOCKET
SWITCH ON VOLUME CONTROL
A.C. POWER SOCKET
INPUT TRANS.
5U4G
RECT.
40MFD
40MFD
PILOT LAMPS
TO ALL HEATERS EXCEPT 5U4G RECT.
Q
R
S
T
U
V
W
X
Y
Z
471-34



471-34

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement. Noise rectifier tube is removed for stage gain measurements.

CHASSIS—TOP VIEW



NATIONAL UNION MODEL G-619 REPLACES FOLDER NO. 467-21

NATIONAL UNION MODEL G-619 REPLACES FOLDER NO. 467-21

NATIONAL UNION MODEL G-619 REPLACES FOLDER NO. 467-21

NATIONAL UNION MODEL G-619

TRADE NAME	National Union Model G-619 "Presentation"
MANUFACTURER	National Union Radio Corp., Newark 2, New Jersey
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types, 12SK7GT RF Amp., 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	535-1620KC RATING .230 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS

To set pointer, turn variable fully open and set pointer at last punch mark at right end of dial. Use isolation transformer if available. If not, connect capacitor in series with the low side of the signal generator and B-. Set volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator of rear section of variable. Low side to B-.	455KC	High freq. end (Variable fully open)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation trans. is not used, reduce dummy ant. to .001 MFD. to reduce excessive hum modulation.
200 MMF.	High side to ext. ant. lead. Low side to chassis.	1620KC	"	"	A5	Adjust for maximum output.
200 MMF.	"	1400KC	Tune for maximum output.	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: NATIONAL UNION PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7GT	12SK7GT	8N	
2	Converter	12SA7GT	12SA7GT	8AD	
3	IF Amp.	12SK7GT	12SK7GT	8N	
4	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: NATIONAL UNION PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	50	150		2N521	DHN-2x50-150	EL-25	PRSA150-40-40	EZ5515	Filter - Red
B	50	150							" - Yellow
8	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Line Filter
9	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	35L6 Plate Bypass
10	.005	400		TP408	S-6-005	TC-25	484-005	DT6D5	Audio Coupling
11	.005	400		TP408	S-6-005	TC-25	484-005	DT6D5	" "
12	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	IF Screen Bypass
13A	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter *
B	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
14	.25	400		TP430	S-4-25	TC-2	484-.25	DT4P25	Line Isolating
15	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Pwr. Supp.
16	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter *
17	220	500		MC237	MO.5-32	1FM-32	1468-0002	5W5T2	Grid Bypass
18	10	500		MC215	MO.5-41	MS-41	1469-00001	5W5Q1	Fixed Trimmer
19	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Capacitor
20	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling

*Used in early production

CONTROLS

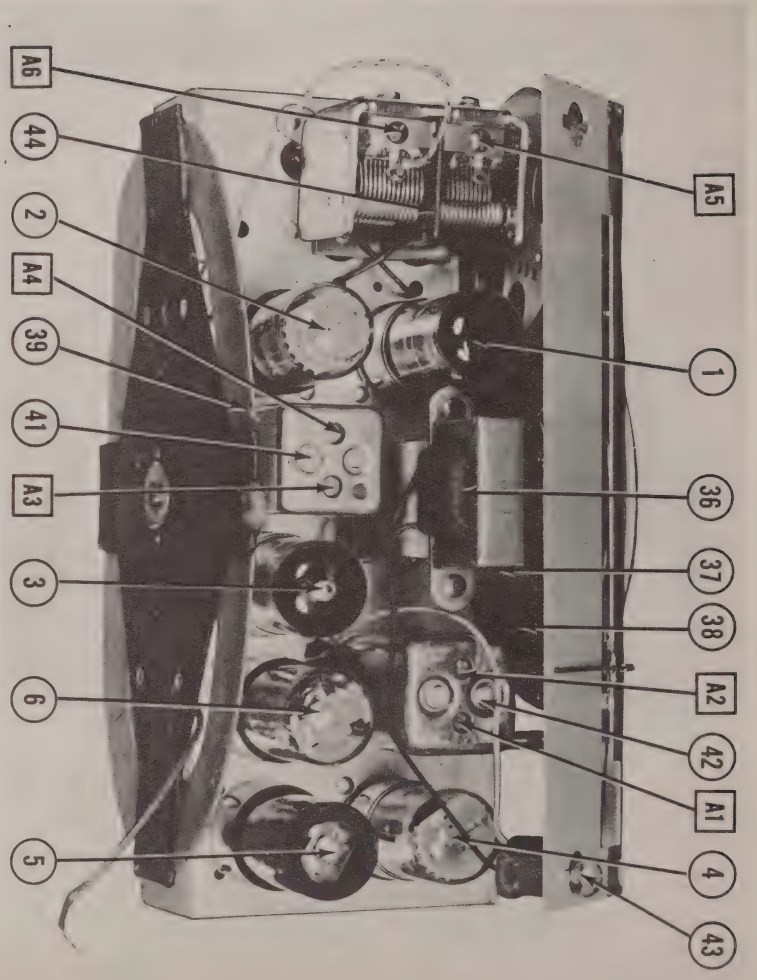
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: NATIONAL UNION PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	500KΩ	1	650.504E	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 21A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: NAT. UNION PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
22	3300Ω	½		BTS-3300	Or.-Or.-Red RF Plate Load
23	4700Ω	½		BTS-4700	Yl.-Vi.-Red Mixer Grid
24	10KΩ	½		BTS-10K	Br.-Blk.-Or. Oscillator Grid
25	10KΩ	½		BTS-10K	Br.-Blk.-Or. Oscillator Grid
26	1000Ω	½		BTS-1000	Br.-Blk.-Red IF Decoupling
27	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
28A	3.9 Meg.	½		BTS-3.9 Meg.	Or.-White-Grn. 1st AF Grid - See Note 1
B	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid - See Note 2
29	220KΩ	½		BTS-220K	Red-Red-Yl. 1st AF Plate Load
30	270KΩ	½		BTS-270K	Red-Vi.-Yl. Output Grid
31	47Ω	½		BW-½-47	Yl.-Vi.-Blk. Output Cathode
32	1200Ω	2		BT-2-1200	Br.-Red-Red Filter
33	33Ω	½		BW-½-33	Or.-Or.-Blk. Surge Limiter
34	220KΩ	½		BTS-220K	Red-Red-Yl. Line Isolating
35	150Ω	1		BT-1-150	Br.-Grn.-Br. Pilot Light Shunt-See Note 3

Note 1 - Used in early production
Note 2 - Used in later production
Note 3 - Not used in all models

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		NATIONAL UNION PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
36	1850Ω	3.1Ω	140Ω	.5Ω		A-3878	T-25845		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			NATIONAL UNION PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-106		
37	PM	3.1Ω		Mod. P6-W		
	CONE DIA.	VC DIA.				
38	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

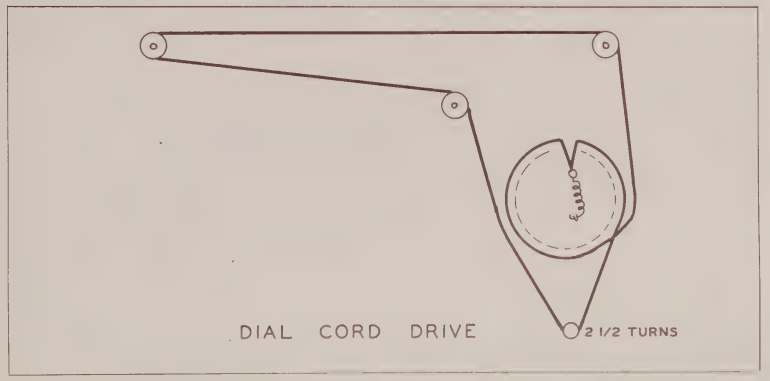
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	NAT. UNION PART No.	MEISSNER PART No.	
39	Loop Ant.	0Ω	1.1Ω	LL-11		
40	Osc. Coil		5.5Ω	AL02	14-1040	
41	Input IF	16.5Ω	15Ω	TM2-1	16-6658	
42	Output IF	15Ω		TM2-3	16-6670	

DIAL LIGHT

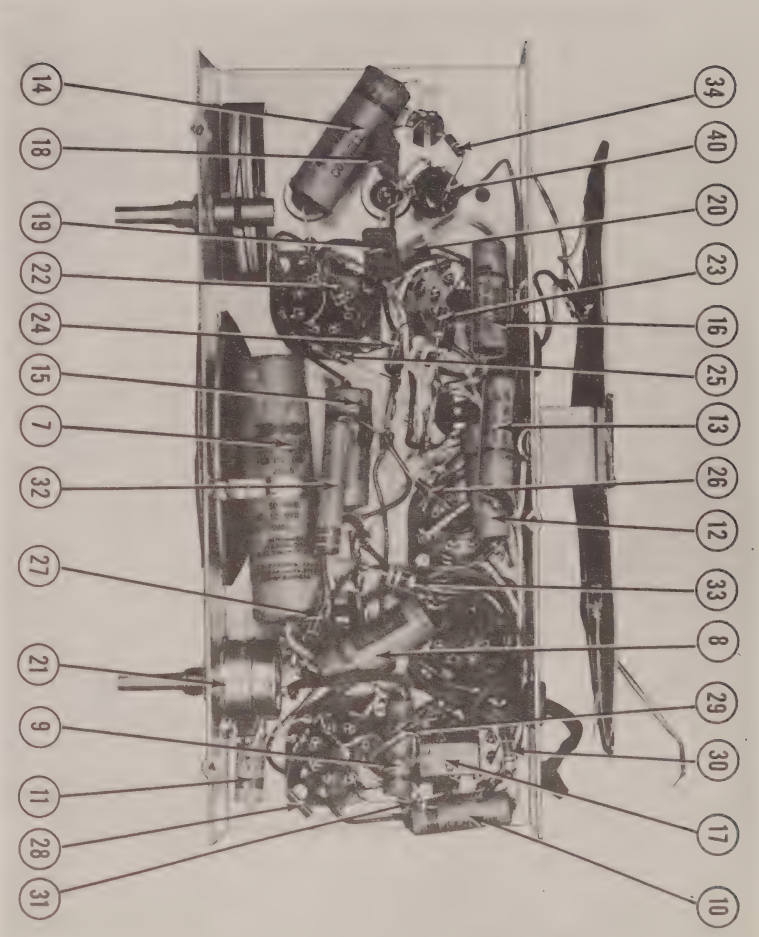
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					NAT. UNION PART No.		
43	Bayonet	6-8	0.2	White			Type 51

MISCELLANEOUS

ITEM No.	PART NAME	NAT. UNION PART No.	NOTES
44	Tuning Cap.		2 Gang Variable Cap.

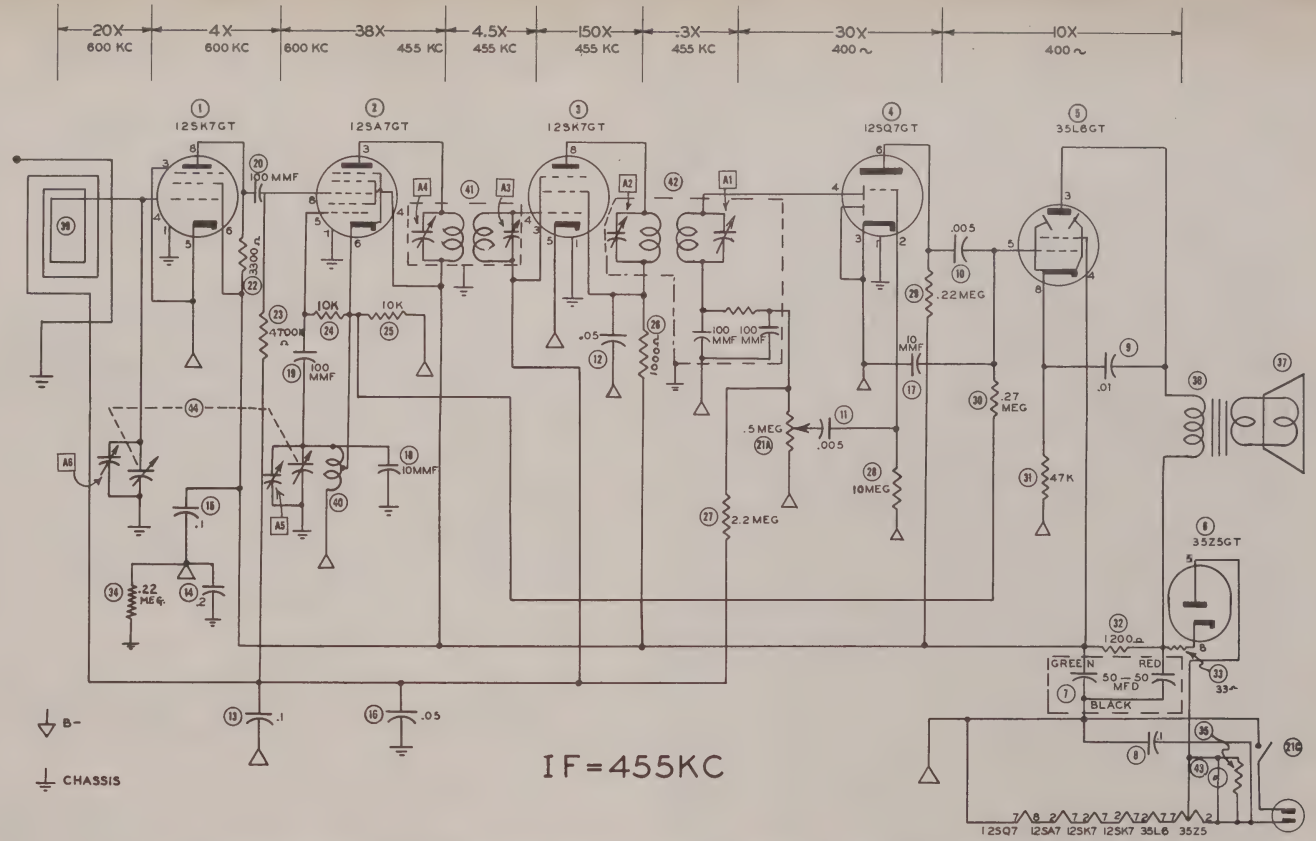


CHASSIS—BOTTOM VIEW



NATIONAL UNION MODEL G-619

NATIONAL UNION MODEL G-619



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	0V.	26.5V.AC	0V.	-.82V.DC	0V.	71V.DC	39V.AC	44V.DC
2	12SA7GT	0V.	13V.AC	71V.DC	71V.DC	-4.4V.DC	0V.	26.5V.AC	-.82V.DC
3	12SK7GT	0V.	39V.AC	-.82V.DC	-.82V.DC	0V.	62V.DC	52V.AC	62V.DC
4	12SQ7GT	0V.	-.9V.DC	0V.	-.5V.DC	0V.	55V.DC	0V.	13V.AC
5	35L6GT	0V.	52V.AC	105V.DC	71V.DC	-1V.DC	-2.2V.DC	87V.AC	1.45V.DC
6	35Z5GT	0V.	117V.AC	114V.AC	0V.	114V.AC	0V.	87V.AC	112V.DC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	215 KΩ	23Ω	0Ω	2.6MEG.	0Ω	35KΩ	34Ω	38KΩ
2	12SA7GT	215 KΩ	12Ω	35KΩ	35KΩ	18.5 KΩ	.5Ω	23Ω	2.6MEG.
3	12SK7GT	215 KΩ	34Ω	2.6MEG.	2.6MEG.	0Ω	36KΩ	45Ω	36KΩ
4	12SQ7GT	215 KΩ	10MEG.	0Ω	550KΩ	0Ω	255 KΩ	0Ω	12Ω
5	35L6GT	INF.	45Ω	35KΩ	35KΩ	330KΩ	9.6KΩ	73Ω	45Ω
6	35Z5GT	INF.	100Ω	97Ω	INF.	97Ω	INF.	73Ω	35KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

471-35

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

TOP VIEW

SEEBURG "K"—GENERAL

This changer is designed to play and automatically change up to fourteen 10-inch or ten 12-inch records, not intermixed. The last record will be repeated until the changer is turned off. Power supply is 105-125 volts A.C., 60 C.P.S.

MANUFACTURED BY J. P. SEEBURG CORP., 1500-24 DAYTON STREET, CHICAGO 22, ILLINOIS

The following manufacturers have used this record changer in Postwar receivers:

COMPANY	ADDRESS	THEIR NUMBER
Crosley Corporation	1329 Arlington Street, Cincinnati, Ohio	D-134945
Electro-Tone Corp.	221 Hudson Street, Hoboken, New Jersey	414
Espey Mfg. Co.	528 East 72nd Street, New York, New York	28001
Garod Radio Corp.	70 Washington Street, Brooklyn, New York	C-36.101-1 & 2
General Electric Co.	Bridgeport, Connecticut	7-751173
General Tel. & Radio Co.	2701 Lehmann Court, Chicago, Illinois	
Hoffman Radio Corp.	3761 South Hill Street, Los Angeles, California	K-228510
Magnavox Co.	2131 Bueter Road, Fort Wayne, Indiana	520517
Magnavox Co.	2131 Bueter Road, Fort Wayne, Indiana	530517-G-3
Majestic Radio & Tel. Corp.	St. Charles, Illinois	21-2
Olympic Radio & Tel. Co., Inc.	3101-19 38th Avenue, Long Island City, New York	RX-227
Plaza Mfg. Co., Inc.	869 Broadway, New York, New York	
Rogers-Majestic Radio Corp.	622-40 Fleet Street, West, Montreal, Quebec, Canada	090-011-2
Rogers-Majestic Radio Corp.	622-40 Fleet Street, West, Montreal, Quebec, Canada	090-015
Rogers-Majestic Radio Corp.	622-40 Fleet Street, West, Montreal, Quebec, Canada	090-016
Rogers-Majestic Radio Corp.	622-40 Fleet Street, West, Montreal, Quebec, Canada	090-023
Sparks-Withington Co.	2400 E. Ganson Street, Jackson, Michigan	PD-93100
Stromberg-Carlson Co.	100 Carlson Road, Rochester, New York	B-22171
Tech-Master Products Co.	123 Prince Street, New York, New York	37.8
Templetone Radio Mfg. Corp.	New London, Connecticut	
Union Electronics Corp.	38-01 Queens Boulevard, Long Island City, New York	119-2
U. S. Television Mfg. Corp.	3 West 61st Street, New York, New York	PD-93000
Wells-Gardner & Co.	2701 North Kildare Avenue, Chicago, Illinois	28A119

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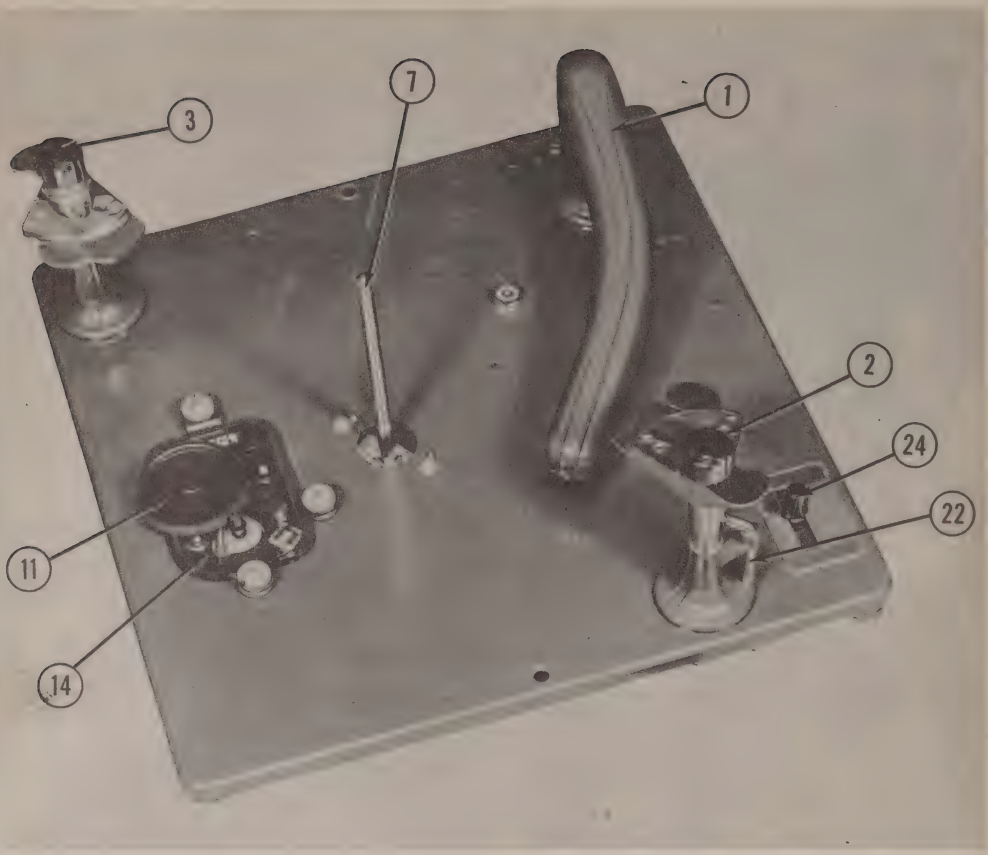


TOP VIEW WITHOUT TURNTABLE

MANUAL OPERATION

Odd-sized or warped records or home recordings should be played manually.

1. Turn selector knobs as for unloading.
2. Place record on turntable.
3. Move the control knob to "manual" position.
4. Place the pickup arm on the record.
5. When the record has finished playing, the pickup arm may be returned to its rest by hand.

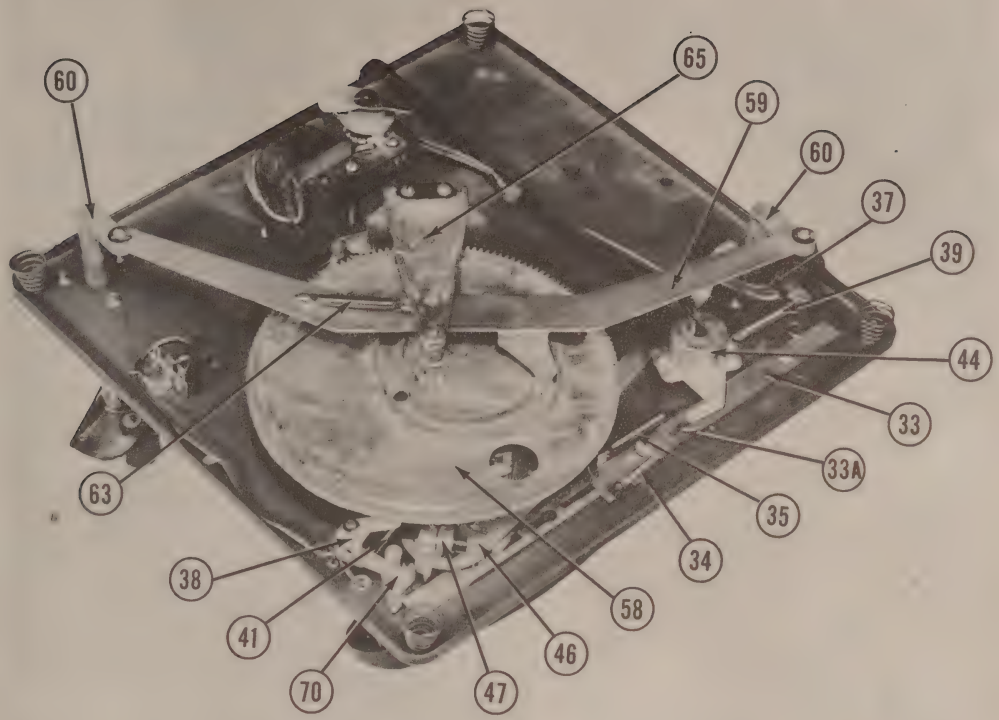
Placing the control knob in "manual" position moves the arm (30) into position near the clutch engagement lever (58A), preventing this lever from falling to start the change cycle.

AUTOMATIC OPERATION

1. Turn the selector knobs for the correct size records.
2. Place up to fourteen 10-inch or ten 12-inch records on the selector knobs. Do not intermix sizes.
3. Move the control button to "Reject" position and then release it. The button will return to "Auto" position. The changer will now play the entire stack and repeat the last record until the switch is moved to "off."
4. To reject any record, move the control button to "Reject" and release it.
5. To shut off the changer move the control knob to "off," then lift the tone arm manually and return it to its rest position.
6. To unload records, lift the selector arms and turn them so they will clear the records.

LUBRICATION

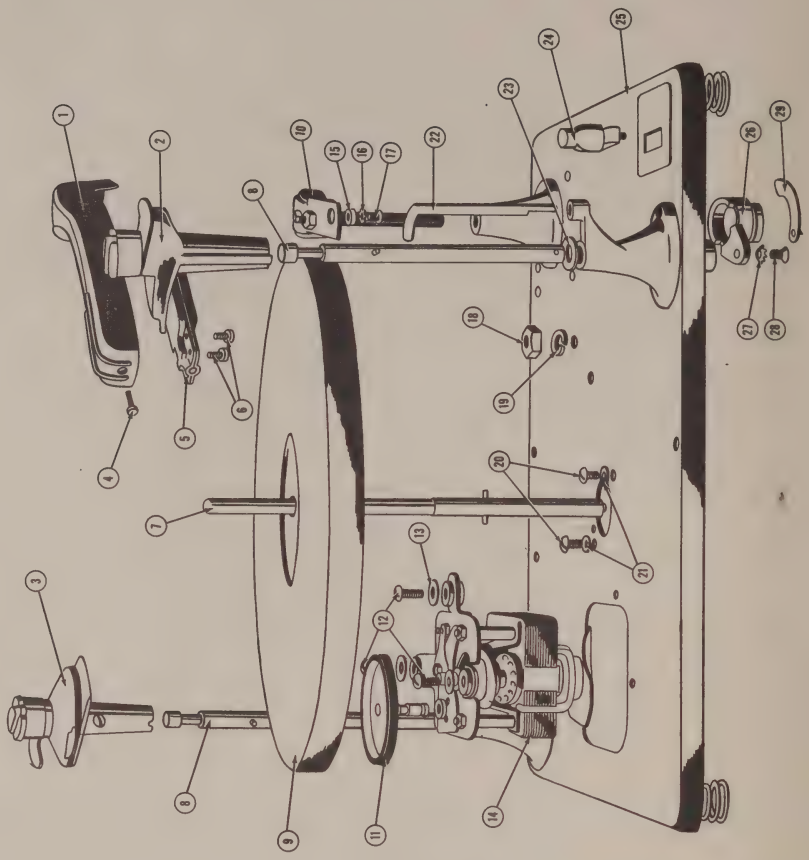
Lubrication applied at the time of manufacture is usually sufficient for several years. If lubrication becomes necessary, use a light grease such as Lubriplate, or its equivalent, on cam surfaces and gear teeth. Use light machine oil on all shafts and on the spindle. Do not oil the clutch engagement lever as it is designed to run dry. Do not allow oil or grease to touch rubber parts.



BOTTOM VIEW

THE CHANGE CYCLE

1. As the control slide (33) moves from "off" past "auto," the slot (33A) turns the power switch (44) on.
2. When the control slide reaches "Reject," the changer is tripped as follows: The control slide, working through the connecting link (29), moves the reject slide (30) toward the spindle. The reject slide strikes the stud on the trip lever (56) causing the trip lever to move and allow the clutch engagement lever (58A) to fall.
3. When the clutch engagement lever falls, lug 66A on the rotating pinion (66) strikes it, thus moving the main cam (58) enough to allow its teeth to mesh with the rotating pinion.
4. As the main cam rotates, the tone arm lift pin (50) rides up the inclined surface of the main cam, thus raising the pickup arm from the record.
5. The bottom surface of the main cam (58) actuates the drive link (59), causing the selector arms to rotate a quarter turn to release a new record. The motion of the drive link is transmitted to the selector arms by means of the drive cranks (60).
6. The clutch engagement lever (58A) is reset with the trip lever (56) by means of the tone-arm lever (47) which is locked in position by tone-arm latch lever 38.
7. As surface 58B of the main cam passes the tone-arm latch lever (38), tone-arm lever 47 is released. The stud on the tone-arm lever then follows the receding cam (58C).
8. Spring pressure from the tone-arm locator (46) moves the tone-arm lever (47), and thus the tone arm, toward the record. The point at which the tone-arm locator stops is determined by the setting of the selector arms.
9. The stud on the tone-arm lever (47) contacts the retard lever (54). Thus the tone-arm lever is held in position between the retard lever and the tone-arm locator.
10. The tone-arm lift pin (50) rides back down the inclined surface of the main cam, lowering the pickup to the record. After the needle touches the record, the booster spring (45) exerts a slight pressure to move the needle into the starting groove.
11. As the needle enters the groove, main cam (58) completes its revolution, and is locked in open-tooth position by the drive-gear stop lever (65A).



AUTOMATIC TRIP

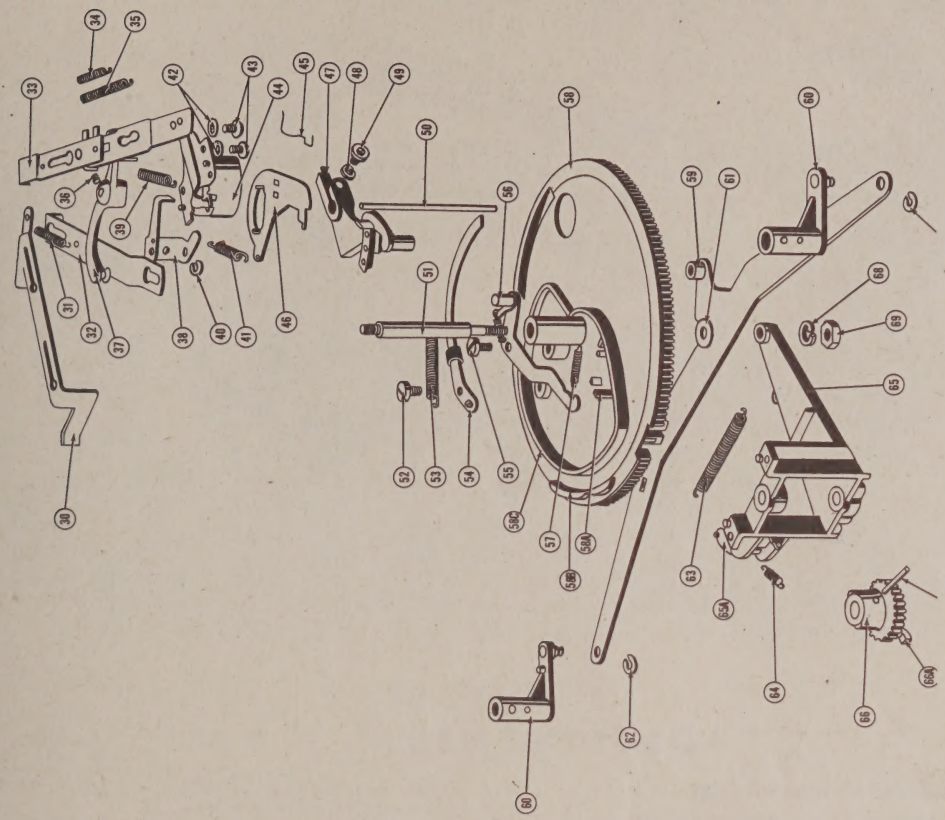
At the end of a record, the change cycle is started by either of two actions releasing the clutch engagement lever.

1. Minimum diameter cut-off occurs when the trip shoe attached to the tone-arm lever strikes the trip lever (56).

2. Eccentric groove cut-off occurs when the tone arm is moved away from the spindle. The sawtooth edge of the trip plate engages and moves the trip dog on trip lever 56. Either of these actions allows the clutch engagement lever to fall, starting a new cycle.

12-INCH RESET

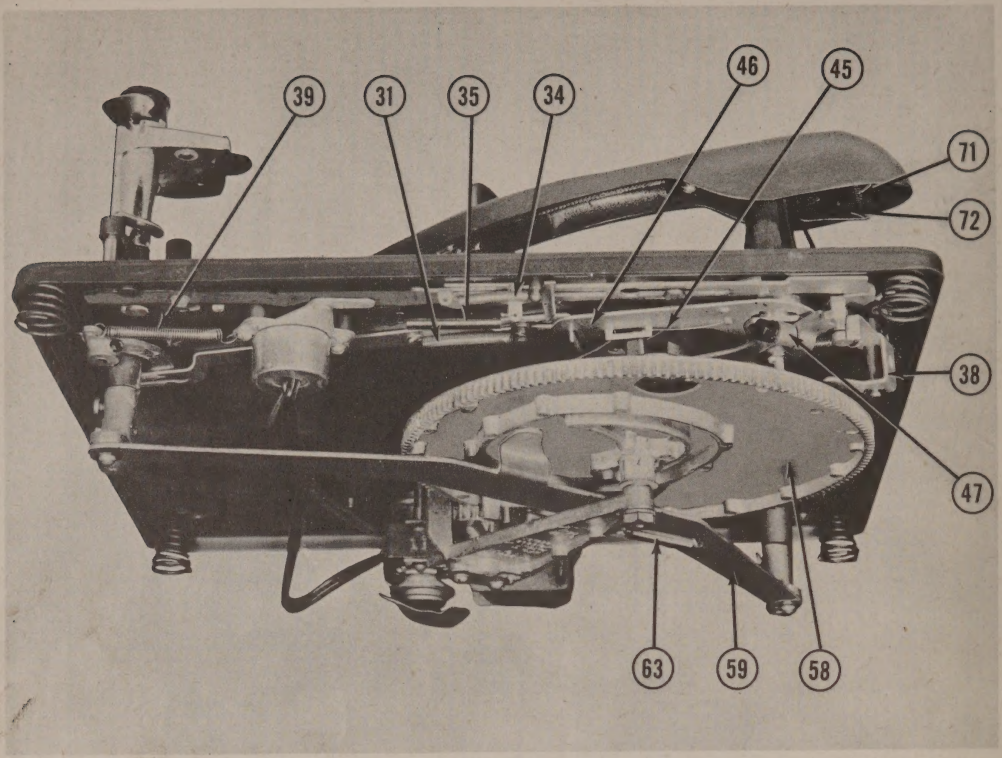
When the selector arms are turned to the 12-inch position, the rib on selector arm (2) is in such a position as to strike the 12-inch reset rod (22) during the change cycle. This movement is transferred through the 12-inch reset lever (37) to the slide (32). The position of this slide determines which part of the tone arm locator (46) will be engaged, and thus determines how far in the tone arm locator will move.



MANUAL OPERATION

When the control button is moved to "Man," four conditions are set up.

1. The motor switch is turned on.
2. The end of the control slide (33), acting through the manual latch lock (70), partially disengages the tone-arm latch lever (38) from its locked position. It now serves as a detent for the tone arm while in rest position. This prevents movement due to accidental bumping.
3. The manual lockout on the control slide engages the tone arm locator, preventing it from moving in.
4. The reject slide (30) moves into position so that the clutch engagement lever is held in place, preventing tripping.



SIDE VIEW

ADJUSTMENTS

SELECTOR ARM AND BLADE

The leading edge of the blades must be smoothly rounded and well polished. The blades must be very free in their mounting so they will return to their normal position by their own weight. The selector arms must be parallel with each other, and synchronized so the record will drop evenly from both arms.

If blade adjustment is necessary, place a 10-inch record of average thickness (.074″) on the selector arms and rotate the turntable by hand until the selector blades contact the record. The blade must rise after it first contacts the edge of the record. This rising cam action results whenever pressure is applied to the leading edge of the blade. The blade may be adjusted by bending, using pliers with tapelined jaws. The height to which the blades are set must be less than the minimum record thickness, otherwise the changer will attempt to change two records at the same time due to the cam action which always operates in an up direction.

When necessary, make the same adjustment for 12-inch records using a standard 12-inch record (approximately .090″).

INCORRECT TONE-ARM INDEXING

Insufficient tension in the locator spring (41) will result in erratic or incorrect pickup arm landing since the locator will not seat in the fixed 10-inch or 12-inch indexing position. It will also result in a jerky action of the tone arm, since the tone-arm lever will not accurately follow the cam surface of the large gear.

Excessive spring tension will result in a stiff, heavily loaded "feel" as the pickup arm is moved to its rest position. It may also result in a stiff action of the control slide and cause increased wear on moving parts.

TONE-ARM POSITIONING

1. Set the control knob to "off" (power plug out).
2. Place a 10-inch record on the turntable and set the selector arms for 10 inch.
3. Loosen the Allen socket cap screw (49) just enough to allow the tone-arm lever to still hold its position.
4. Line up the outer edge of the tone arm evenly with the panel edge. This gives the tone arm an approximate setting.
5. Push the control knob to reject and release it. Rotate the turntable clockwise and note where the needle first touches the record. This should be about one-eighth inch from the edge. Corrections may be made by slipping the tone-arm lever slightly. Be sure there is sufficient vertical clearance in the tone-arm shaft to prevent binding before tightening the set screw.
6. Check with a 12-inch record. If the 10-inch setting was made correctly, the 12-inch setting should be automatically correct.

TONE-ARM HEIGHT

The tone-arm height is correct when there is an approximate 1/16″ clearance between it and the bottom of a 10-inch record on the selector arms. This may be adjusted by the tone-arm adjusting screw (17).

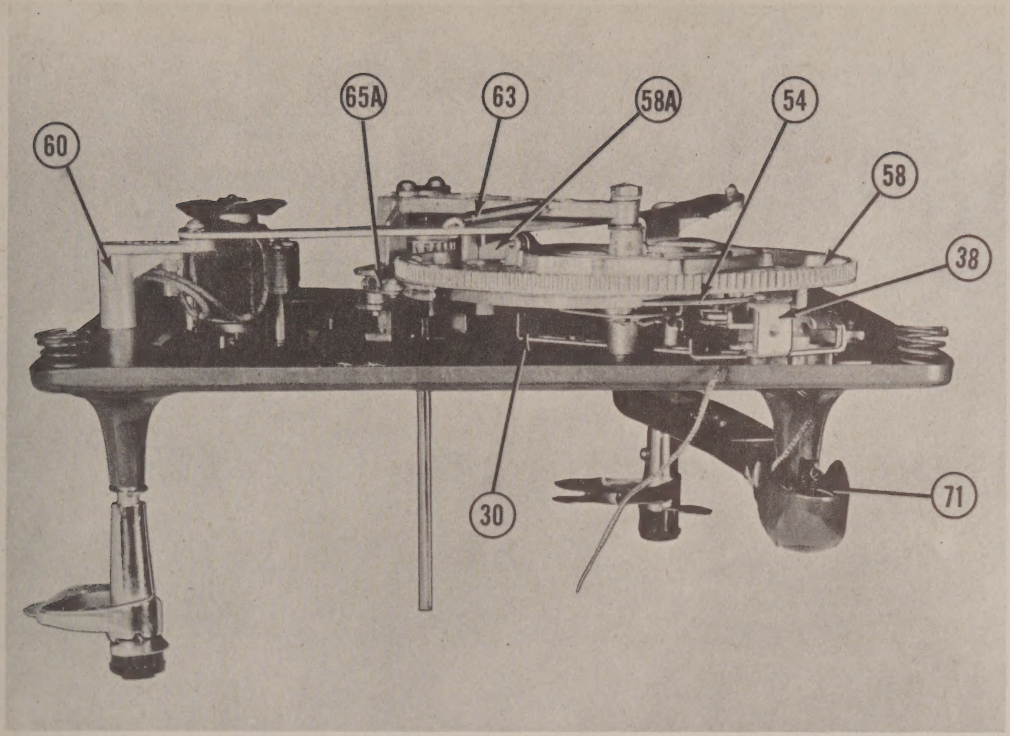
The down position of the arm is controlled by a lug on the front of the hinge assembly. This should be adjusted to allow the bottom edge of the pickup arm and cartridge to clear the turntable by about 1/16″.

NEEDLE PRESSURE

Needle pressure is controlled by the counter-balance spring (71). The pressure may be varied by moving the counter-balance adjusting slide (72). The needle pressure should be not less than 1 1/8 oz.

MINIMUM DIAMETER TRIP

The trip shoe fastened to the tone-arm lever (47) may be adjusted for tripping on records without an eccentric groove. The adjustment should be made so that the changer trips when the needle is 1 7/8″ from the record center.



REAR VIEW

TROUBLES

SYMPTOMS	CAUSE	REMEDY
Motor failure.	1. Broken wire or defective plug. 2. Faulty switch. 3. Faulty linkage between switch and control slide. 4. Motor coils open.	1. Replace switch. 1. Replace motor.
Motor overheats or is sluggish.	1. Poor lubrication. 2. Incorrect line voltage or frequency. 3. Defective winding. 4. Mechanical binding.	1. Oil motor with light machine oil. 1. If necessary, auto-transformer may be used. Special motor necessary for frequencies other than 60 c.p.s. 1. Replace motor. 1. Check changer for mechanical binds.
Rumble in reproduction.	1. Worn rubber rim on idler wheel. 2. Changer not properly floated on motor board. 3. Spindle binding.	1. Replace idler wheel (11). 1. Be sure shipping bolts have been removed. 1. Oil sparingly if necessary.
Record jams.	1. Separator blades. 2. Record odd-sized or damaged.	1. Adjust according to paragraph on selector arm adjustment. 1. Play in "man" position.
Record drops from one side only.	1. Center hole too large. 2. Selector arms out of adjustment.	1. Play in "man" position. 1. Adjust according to paragraph on selector arm adjustment.
Records drop more than one at a time.		1. Check adjustment of selector blades.
Needle lands incorrectly.		1. Check adjustment of set-down point. 2. Retard lever spring (53) tension incorrect. 3. Locator spring (41) tension incorrect.
Needle fails to feed in.	1. Booster spring.	1. Bend booster spring (45) to provide more tension.
Needle slides across first few grooves.	1. Booster spring.	1. Bend booster spring (45) to provide less tension.
Changer fails to trip.	1. Trip shoe out of adjustment. 2. Tone arm lead wire. 3. Clutch engagement lever not unlatching. 4. Trip lever binding.	1. Adjust to trip at 1⅞" from center of record. 1. Be sure lead wire has enough slack. 1. Clean, but do not lubricate. 1. Check to see that trip lever moves freely.
Changer trips continually.	1. Clutch engagement lever fails to latch. 2. Control knob binds in "Reject" position. 3. Stop lever fails to detent.	1. Check trip lever for bind or for weak spring. 1. Check control slide and associated parts. 1. Check stop lever spring (64).

PARTS LIST

Ref. No.	Seeburg Part Number	DESCRIPTION
1	K228260	Tone Arm
2	K228197 K228195 K228192 K228196	Selector arm No. 2 and blade assby. (10″) Selector blade (12″) Selector arm knob Selector arm No. 2 complete
3	K228189 K228195 K228192	Selector arm No. 1 and blade assby. (10″) Selector blade (12″) Selector arm knob
4	K228219	Needle screw
5	K228221 K228413	Pickup cartridge (for standard models) Pickup lead
6	71096	1/4″ x 4-36 oval fil.H.M.S.
7	K228164	Turntable spindle assembly
8	K228178 K228180	Selector shaft assembly Pin
9	J22078	Turntable assembly
10	K228144 K228145	Tone arm hinge assembly Hinge bracket and shaft assembly
11	J22143 K228256	Idler wheel used with motor K228131 Idler wheel used with motor K228250
12	71502	5/8″ x 6-32 B.H.M.S.
13	72138	1/2 O.D. x 9/64 I.D. x .015 washer
14	K228131 K228250	Motor Motor
15	K228217	Washer
16		Lock washer
17	K228238	Tone arm adjusting screw
18	70069	7/16″ x 12-24 nut
19	73087	Lock washer
20		R.H.M.S. 8-32 x 5/16″
21		Lock washer
22	K228130	12″ reset rod
23	72117	Washer 9/16″ O.D. x .316 I.D. x .032
24	K228121 K228210	Control button Control escutcheon
25		Mounting base
26	K228122	Tone arm locator hub
27	73084	Lock washer
28	71018	1/4″ x 6-32 F.H.M.S.
29	K228120	Connecting link
30	K228119	Reject slide
31	J22121	12″ Reset slide spring
32	K228126	12″ Reset slide
33	K228114	Manual lockout assembly (control side)
34	J22058	Manual lockout spring (outer)
35	K228118	Manual lockout spring (inner)
36	75042	Set screw, Allen head, 10-32 x 1/4″ cup point
37	K228128 K228127	12″ Reset lever Reset lever assembly

Ref. No.	Seeburg Part Number	DESCRIPTION
38	K228125	Tone arm latch lever
39	B27093	12″ Reset lever spring
40	J22021	Small "C" washer
41	C29130	Tone arm locator and latch spring
42		Lock washer
43		R.H.M.S. 6-32 x 1/4″
44	K228213 K228133 K228243 K228244	Power switch assembly Switch plate assembly Switch cover Insulating disc
45	H20129	Booster spring
46	K228123	Tone arm locator assembly
47	K228152 K228156	Tone arm lever assembly Trip shoe
48		Lock washer
49	75047	Allen socket head machine screw 5/8″ x 10-32
50	K228199	Tone arm lift pin
51	K228168	Drive gear shaft
52	B27088	Retard lever screw
53	B27067	Retard lever spring
54	K228176 K228175 72040	Tone arm retard lever Retard lever bumper (rubber) Retard lever spring washer
55	K228214	Trip lever screw
56	K228172 K228203 B27063 K228202	Trip lever Trip lever bumper (rubber) Trip dog spring Trip dog bumper (rubber)
57	B27092	Trip lever spring
58	K228170	Drive gear
58A	K228171	Clutch engagement lever
59	K228184 K228187	Drive link assembly Drive link roller
60	K228181	Drive crank assembly
61	K228177	.032″ Fibre thrust washer
62	H20065	"C" washer
63	K228201	Drive link spring
64	B27048	Stop lever spring
65	K228158	Spindle and housing assembly
65A	K228162 K228211	Drive gear stop lever assembly Stop lever pivot pin
66	K228167	Pinion gear
67	80036	Taper pin 3/4 x 3/0
68	73087	Lock washer
69	70069	12-24 x 7/16″ nut
70	K228111	Manual latch lock
71	K228099	Counter-balance spring
72	K228150	Counter-balance adjusting slide